UNIVERSAL INSTRUCTIONAL DESIGN IN POSTSECONDARY SETTINGS

AN IMPLEMENTATION GUIDE

EQUITABLE USE

PERCEPTIBLE INFORMATION

USE OF NATURAL SUPPORTS

MULTIPLICITY IN DESIGN, DELIVERY & EVALUATION

SUPPORTIVE LEARNING ENVIRONMENT

FLEXIBILITY IN USE

JIM BRYSON

GEORGIAN

YOUR COLLEGE · YOUR FUTURE

UNIVERSAL INSTRUCTIONAL DESIGN

"Universal instructional design implies a shared accountability for success between students and instructors. It is recognizing that students are our most important consumers. It is acknowledging that they are entitled to instruction that meets their diverse abilities and styles of learning in an environment in which diversity is recognized and success is supported.

It is about identifying key concepts and presenting them in ways that make them accessible to students with auditory and visual learning disabilities, short attention spans, limited academic skills or high anxiety. It is about adapting instruction to students as much as we expect students to adapt to instruction. It is about ensuring adequate support for students in terms of a variety of human resources.

It is about cooperative learning. It is about increasing interaction between teachers and students. It is about form and format. It is about developing variety and flexibility within established learning outcomes for individual courses."

(Jim Bryson – LDAO Newsletter – 2003)

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REFERENCES AND CITATIONS

We have attempted to accurately cite all references in this document. Some have been taken from secondary rather than primary sources and we relied on the correctness of those secondary sources.

THE LEARNING OPPORTUNITIES TASK FORCE

The Learning Opportunities Task Force is a task force of the Ministry of Training, Colleges and Universities. Under the Chairmanship of Dr. Bette Stephenson and the direction of Senior Consultant Eva Nichols, the Task Force has funded, directed, supported and systematically evaluated seven 4-year pilot projects in colleges and universities in Ontario. The focus of these pilot projects was to determine the most effective programs and services to support the academic success of students with confirmed specific learning disabilities. Their report was released in May 2003 and is available at www.lotf.ca

The results of this work demonstrated clearly not only the capacity of these students to succeed and excel in postsecondary education but also defined the programs, services and instructional strategies that were most supportive to that success.

It was out of the work that contributed to the success of the pilot projects that the 'goodness of fit' of Universal Instructional Design and accessibility has become evident.

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FORWARD

In the beginning, education and in particular post-secondary education focused almost exclusively on teaching those who were seen as having the required skills, abilities and characteristics to succeed and learn. Even in elementary and secondary school the focus was on learners of obviously demonstrated and evident average or above average ability. It was expected that these students could and would demonstrate, in a uniform standardized way – typically on tests and examinations – that they had acquired the knowledge and skills that their teachers had imparted to them. Those who were the most successful went on to post-secondary education. The majority did not do so. But at that time, many people were able to obtain and maintain employment without necessarily having to go to college or university.

Students with disabilities either did not attend school at all or were placed in settings where the focus typically was not on academic achievement. Learning disabilities were not known or recognized and although "word blindness" (dyslexia) entered the public domain more than one hundred years ago, students who did not learn effectively in the way in which their teachers taught them were considered to be "slow" and postsecondary education was not even considered to be an option for them.

Then came the era of special education. It began with students with physical disabilities and was later expanded to include students with all disabilities, including those who are now identified as having specific learning disabilities.

In the last twenty three years, special education, primarily in the form of differentiated teaching, often different expectations and outcomes, accommodations and modifications, has been an important part of what school boards were expected to provide.

For students with specific learning disabilities the dilemma was that they had average to above average ability but were often not able to demonstrate this in an effective manner. Those whose ability and special talents allowed them to circumvent the barriers created by their learning disabilities often entered postsecondary education and were successful. Others who had the resources and supports for tutoring and extra help were also able to achieve their goals. But the majority of students with learning disabilities in the special education classes and programs of Ontario's secondary schools typically were not encouraged to seek entry to college or university, in spite of the fact that many more careers and jobs called for post-secondary education and/or training.

The introduction of academic accommodations and the development of technology changed some of this. As the work of the Learning Opportunities Task Force demonstrated so conclusively together with the pilot projects, students with specific learning disabilities are as able to achieve in postsecondary education as their non-disabled peers, provided that they are enabled to make the transition to postsecondary education and have access to the necessary supports and accommodations. The range of learning strategies, the diverse accommodations, including but not limited to assistive technology, have altered the learning landscape in the postsecondary sector for this population.

While we have a long way to go yet to ensure that every student with learning disabilities who has the required abilities and interest is enabled to make the transition to college or university successfully, we have improved the situation considerably by sharing the results of our piloting work. But if that is so, then the question must be asked: why are we promoting Universal Instructional Design (UID) instead of continuing to focus on accommodations and special education related concepts?

As this manual demonstrates so effectively, adopting the principles of UID will enhance access to appropriate education for all learners, including those who have learning disabilities. UID will reduce the need for add-on differentiation in many cases. While it does not eliminate the need for specific accommodations for students with disabilities in certain circumstances, it will help to minimize the need for individualized accommodations for many students, who may prefer not to be singled out for the provision of these. Implementing the principles of UID will also have unanticipated benefits for others, who do not have a disability, but who have a variety of needs and circumstances.

Certainly the UID pilot projects that the Learning Opportunities Task Force funded demonstrated conclusively that with the introduction of UID all learners win and teaching faculty, once they have made the commitment, recognize the benefits for all their students as well as themselves. In an ideal world, all students will be taught and enabled to learn in the way that they learn best. We believe that Universal Instructional Design is one of the most effective tools to achieve this ideal world.

For these reasons and for the benefit of all students, including but not limited to the largest group of students with disabilities, i.e., those who have specific learning disabilities, the Learning Opportunities Task Force is pleased to support this initiative and recommends its adoption throughout the post-secondary educational sector. In addition, we look forward to the introduction of UID principles into the earlier levels of education. UID in the elementary and secondary sector will not eliminate the need for special education, but it will augment its delivery. Students with specific learning disabilities, who are our primary target group, will be the primary beneficiaries of this important next step.

Eva Nichols
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ABOUT THE AUTHOR

Jim Bryson is a faculty member/counsellor at Georgian College of Applied Arts and Technology in Barrie, Ontario, Canada. For the past four years he was the Program Coordinator of the Centre for Access and Disability services and worked with a team of almost twenty professionals who provide support services, across three campuses, to students with specific learning and other disabilities.

Jim believes ardently in the privilege and responsibility of teaching. His experience in adult education at the educational, corporate and organizational levels has enabled him to see the value in a Universal Instructional Design approach to postsecondary instruction and the adult learning environment. He has also watched two daughters navigate the postsecondary system and benefited from their feedback.

Over the past year and a half he coordinated a research project in the implementation of Universal Instructional Design methods in adult education. This project involved instructional staff at five colleges and universities in Ontario and at an armed forces training centre. The reports and results of the project are found at http://www.georgianc.on.ca/student-services/c4a/uid_home.htm This implementation guide incorporates the findings of that study and other work in Universal Instructional Design with a focus on practical instructional methods that teachers can apply.

ACKNOWLEDGEMENTS

"Masterpieces are not single and solitary births; they are
the outcome of many years' thinking in common, of
thinking by the body of people, so that the experience of
the mass is behind a single voice." – Virginia Woolf

AN IMPORTANT MESSAGE

It is very important to make one point abundantly clear from the outset. The focus of this guide and of Universal Instructional Design, whatever its form and format, is to enhance the development of accessible curriculum content *for **all** students*.

This implementation guide reflects in particular on what is necessary in order to include students with specific learning disabilities and students with all disabilities in the postsecondary learning community. However, the attitude, approach and collection of ideas and techniques referred to as 'Universal Instructional Design' **is about and for all students** in our colleges and universities.

One misconception is that when we speak about Universal Instructional Design we are talking about developing methods and tactics **solely** for the benefit of students with disabilities. That is not so.

It is about developing a variety of instructional methods and tactics to enhance the learning of all students in a manner that allows students with disabilities equal entry, participation and benefit. These students are our benchmarks for success as they will confirm for us that our efforts have produced curriculum content, instructional methods and forms of evaluation that are accessible to each of them while maintaining program standards for performance and achievement.

When you see references to students with specific learning and other disabilities, please keep the information in proper context. Universal Instructional Design is for all students and for all teachers. If you understand this point you understand the point that matters most.

A NOTE ON NAVIGATING THIS GUIDE

You will find that there is a significant amount of preparatory material in this guide. It established the context that underlies the content and the form in which it is communicated. We believe, obviously, that this information is necessary and important to the reader's understanding. There are, however, many types of readers. Which are you?

I want a short overview and then I want to get to the information on application of the principles.	5-7; 36-42; 65-96
I just want to get a quick overview of the Universal Instructional Design approach.	8; 36-42; 44-50; 113-122
I am not interested in teaching practices but want to understand what a Universal Instructional Design approach means.	1; 3-4; 8; 27-35; 36-43; 44-50; 61-64; 71-73; 113-122
I am interested in how this will benefit students with disabilities in my courses.	1; 2-4; 15-24; 36-43; 61-64; 71-96

PREAMBLE

"When you reach the end of all the light that there is and take that first step into the darkness, you must believe that one of two things will happen. Either there will be something solid for you to stand on or you will be taught how to fly." Patrick Overton

This is an implementation guide – it is not an academic textbook. It is an instructional booklet, a handbook and a planner. It outlines the principles that are seen as part of the basic foundation of Universal Instructional Design. It outlines some of the key principles of Adult Learning that are relevant to implementation. It refers to some of the research completed in this area. However, the clear and dominant purpose of this guide is to give college and university teachers a foundation for implementing Universal Instructional Design in their classrooms. The italicized quotes we have included from our research project participants emphasize these practices.

It is not our purpose here to **convince** teachers to implement Universal Instructional Design as an approach. The value of this approach in providing **accessible curriculum** has been well established through both research and practice. The goal of this guide is to encourage teachers to put into practice techniques that support these principles at a pace and in a manner they can manage with success. The successful and balanced implementation of this approach is best accomplished through a transition and not through wholesale change. Such an overhaul would be overwhelming. Teachers should plan for small manageable steps when implementing the approach in their classrooms and this guide has been prepared with small, discrete and concrete steps in mind.

There are many ways to teach and there are many extraordinary teachers in postsecondary institutions in Ontario. Universal Instructional Design offers these teachers a framework for standards of instruction and essential elements of 'best practice' in teaching methodology. What this guide offers to these teachers is a process toward implementation. This guide presents a particular view of the essential principles, concepts and methods in a Universal Instructional Design approach to teaching. This view of Universal Instructional Design focuses on **instructor capacity** and incorporates a number of teaching 'best practices.' Others may define and describe this approach in different ways or from different perspectives. Take from this view what you find most helpful in your teaching.

It is not always easy. There are significant barriers. Some of these are related to the time and energy that implementation requires. Others are more systemic and common to most postsecondary settings. Part of the work of implementation is discovering and overcoming the barriers within us and outside us as we move our teaching philosophy and practices forward. It is a matter of learning and then doing something special with what we learn. It is about gaining knowledge and applying knowledge in ways that improve the capacity of all students to succeed, for knowledge only becomes wisdom when it is put to use.

"To conceive of knowledge as simply a collection of information seems to rob the concept of all of its life . . . knowledge resides in the user and not in the collection. It is how the user reacts to a collection of information that matters." Churchman (1971)

ORIGINS

One of the earliest proponents of universal design was Ron Mace. "Ron Mace was a nationally and internationally recognized architect and disability activist whose design philosophy challenged convention and provided a design foundation for a more usable world. He coined the term "universal design" to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability or status in life. He was also a devoted advocate for the rights of people with disabilities."
http://www.hhrc.rca.ac.uk/programmes/designage/ron_mace.html

Beginning in the early 1970s, he focused on the access needs of people with disabilities. The first of many effects of his work was in the field of architecture and construction, in particular the design and construction of buildings. When governments recognized the need to provide people with disabilities improved access to buildings (after sustained and determined lobbying) architects, engineers and designers were challenged to come up with innovative ways to do so. In the early days, these changes were part of retrofitting – design changes put into place after the fact. Since they were an afterthought, results often were not much more convenient than the pre-retrofit design. However, better access was slowly established and many improvements were made. These changes spread from government buildings to all buildings, usually after debate and occasionally the need to legislate change. The general public, those who were not challenged by mobility impairments, often found that changes made to improve access for people with disabilities also made their lives more convenient. This was significant. One of the heroes of this short historical story is the 'curb cut.'

That simple design, a mini-ramp in concrete that allows wheelchairs and scooters easier mobility around towns and cities, made an incredible difference. When non-disabled people found that they could manoeuvre their baby strollers, carriages and grocery carts because of these 'curb cuts' their support accelerated change. This has become a keystone principle of accessibility – ***when changes in practice to make things more accessible to those with disabilities benefit non-disabled people as well, the approach is more likely to be accepted and validated***. The general public's validation of changes in construction was influential and gradually there was increased tolerance and support for other provisions such as improved signage, audible signals in elevators and at street corners and automatic doors. We have not looked back. These innovative modifications to the design and construction of buildings have become standards. They have resulted in the development of new building methods, new materials and innovative ways of thinking about interior design. Now no one would (or be permitted to) construct a building not designed to accommodate the needs of those with disabilities. That is a sign of successful transformation.
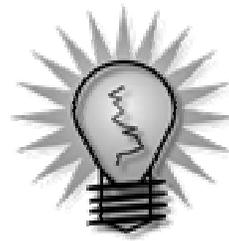
The issue has evolved into one of accessibility in addition to access. We may have a curb cut and an automatic door and so people with mobility impairments have access to the building. But if directories are high up on walls, if light switches are too high to reach, if washroom doors are too narrow for access to washrooms in which there is no appropriate toilet and if signage is small, above doors and without Braille, then we do not have true accessibility. These changes also matter. However, we are making progress in these areas.

Ron Mace's recognition of the need to accommodate those with mobility impairments and his pioneering work in design and manufacturing of equipment and furnishings to assist them led to the development of his seven basic principles for such design outlined below. For details on his work, check the references in the weblinks section at the end of this guide.

1. *Equitable use*
2. *Flexibility in use*
3. *Simple, intuitive use*
4. *Perceptible information*
5. *Tolerance for error*
6. *Low physical effort*
7. *Size and space for approach and use*
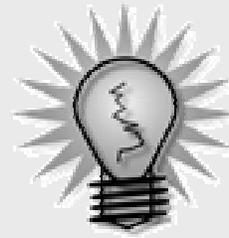
"For most of his life he used a wheelchair and understood what it was to try to participate in a world that was not designed to include him. Ron was the consummate champion for accessible and universal design, and the impact of his work will be felt for generations to come."
http://www.adaptenv.org/accessdesign/profiles/1_mace.php

In this guide, we show how others and we have taken the pioneering work of Ron Mace and his associates and applied the principles and philosophy to postsecondary education with accompanying teaching practices.
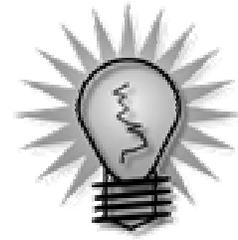
KEY POINTS IN THIS GUIDE

Universal instructional design:

- *Is a way of thinking – an **attitude** about the way that we teach to an increasingly diverse student population;*

- *Is a set of techniques in **design**, **delivery** and **evaluation** that produce accessible curriculum and an inclusive learning environment;*

- *Is a matter of **supporting established standards of performance** in academic courses and programs while finding flexible ways to enhance student learning and performance;*

- *Is a commitment to **choice** and **flexibility** as principal means by which we provide content and opportunities to demonstrate learning;*

- *Is a way of appropriately and effectively using **technology** to the advantage of instructional capacity and student achievement as integral parts of design and delivery and evaluation;*

- *Is a matter of **enabling teachers** to deliver content through multiple means so they and their students engage in the process of education;*

- *Is a commitment to providing all students with an **opportunity to interact** with content and with each other as a method of learning;*

- *Is a **set of guidelines for practice** through which teachers make a gradual transition to improved procedures and products; and*

- *Is a means by which a **partnership in learning** between teachers and students is enhanced by making the content accessible.*

A MODEL FOR CHANGE
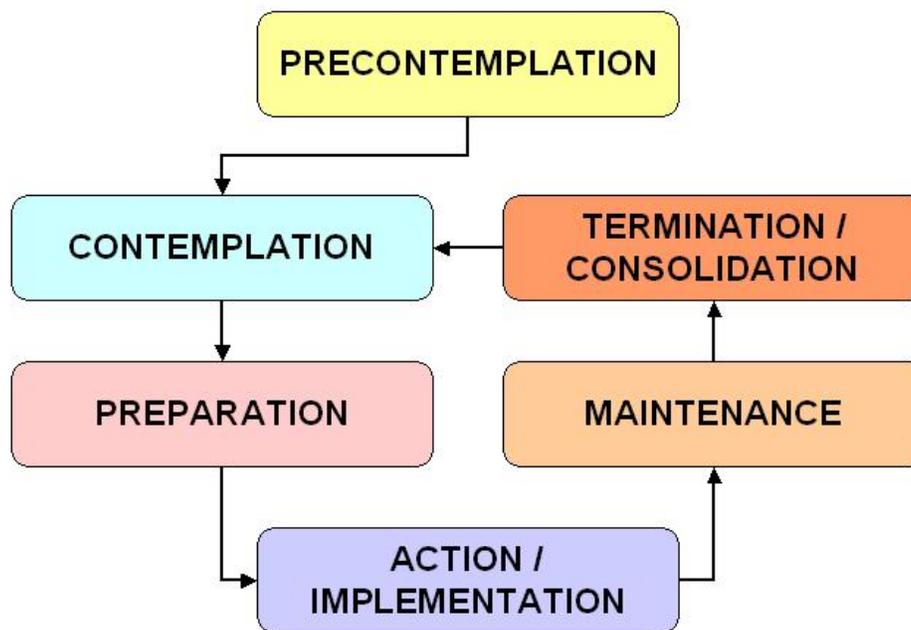
"The essential problem with change is that we hate it and love it at the same time. What we really want is for things to get better but stay the same . . . however, without change there can be no progress."

A MODEL FOR CHANGE

Implementation means intentional change. One of the most useful models for change is the **Transtheoretical Model of Change** that has been proposed by James Prochaska, John Norcross and Carlo DiClemente. http://www.uri.edu/research/cprc/TTM/detailedoverview.htm This model of change provides a useful framework for this guide. The Transtheoretical Model is a model of intentional change. For some of the stages terms are added that are somewhat more relevant to the content of this guide and the approach it promotes. As well, it presents the change process as cyclical rather than linear and describes it as a cyclical process from contemplation to consolidation. Their points have been paraphrased and comments added in *italics* relevant to this guide.

1. ***Precontemplation***: This is the stage in which people are not intending to take action in the foreseeable future, usually measured as the next six months. People may be in this stage because they are uninformed or under-informed about the consequences of their behaviour. *Precontemplation precedes change. The authors note that some may say it is not a part of change but it is a necessary precursor to change. Precontemplation involves some discomfort with the 'status quo' and that is a necessary prerequisite for change. The recognition of personal discomfort is a catalyst for change and growth. This stage provides the motivation for change.*

2. ***Contemplation***: This is the stage in which people are intending to change in the next six months. They are more aware of the pros of changing but are also acutely aware of the cons. This balance between

the costs and benefits of changing can produce profound ambivalence that can keep people stuck in this stage for long periods of time. *In this stage, we overcome hesitation and reluctance and reflect on needs for and implications for change. We gather information and connect new information with what we already know. This stage is a period of 'reflection,' a conscious consideration of practices and possibilities.*

3. **Preparation**: This is the stage in which people are intending to take action in the immediate future, usually measured as the next month. They have typically taken some significant action in the past year. These individuals have a plan of action. *In this stage we move from data gathering to planning for implementation – from discomfort to commitment. The focus is on the specifics of what needs to be done, when, how and so on. This stage is critical, because if preparation and planning are not done well, any anticipated progress can be easily held back by various roadblocks or diverted by distractions. People to not plan to fail – they fail to plan.*

4. **Action/Implementation**: This is the stage in which people have made specific overt modifications within the past six months. Since action is observable, behaviour change often has been equated with action. This is usually the first stage of change visible to others. *In this stage, we put the detailed plan into practice. Good preparation and planning and adequate support help us move into this stage with confidence. The addition of the term 'implementation' is in keeping with the fact that this is a guide for implementation.*

5. *Maintenance*: This is the stage in which people are working to prevent setbacks but they do not apply change processes as frequently as do people in action. They are less tempted to [return to previous behaviours] and increasingly more confident that they can continue their changes. *This is the stage in which the plan has been put into place and we are comfortable with the first elements of change. This is a time in which we are alert to potential problems and pitfalls. This stage requires significant persistence. Teachers have to resist the urge to go back to previous ways of doing their business. They must also resist various distractions that take them off of their intended course.*

6. *Termination/Consolidation*: In Prochaska and DiClemente's model, this stage signifies successful completion of goals. *In terms of Universal Instructional Design, we see this also as a stage of 'consolidation', a time for gathering strength from success and support and then returning in the cycle to contemplation of what needs to be done 'next,' contemplation about ways to build on initial success. As such, it is essential that a formal evaluation component be included as a source of information for consolidation and future planning.*

CONTEMPLATION
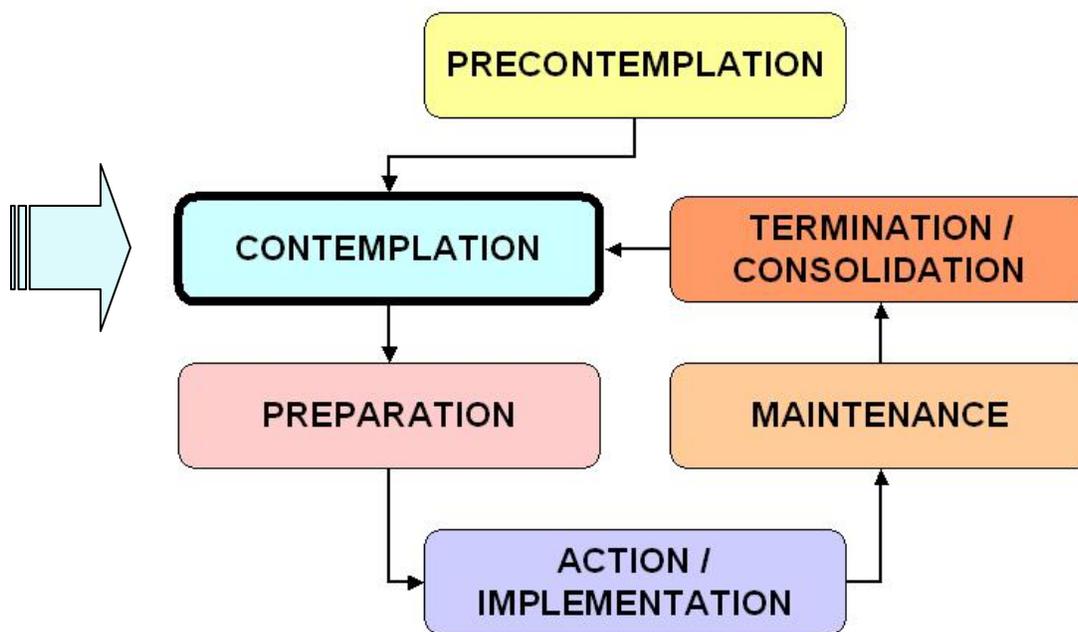
"The significant problems we face cannot be solved at the same
level of thinking we were at when we created them."

Albert Einstein.

PARADIGM SHIFTS

A paradigm is a ***"set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline."*** (American Heritage Dictionary).

A paradigm shift is a change in those assumptions, values and practices. "When anomalies or inconsistencies arise within a given paradigm and present problems that we are unable to solve within a given paradigm, our view of reality must change, as must the way we perceive, think, and value the world. We must take on new assumptions and expectations that will transform our theories, traditions, rules and standards of practice. We must create a new paradigm in which we are able to solve the insolvable problems of the old paradigm." (From the *Paradigm Conspiracy* – Denise Breton and Christopher Largent). While 'paradigm shift' is an often-used phrase in education, it is an appropriate term for the transition in our approach to education.

Shifts involve changes in experience that produce resulting changes in attitude. Learning has been defined as "a relatively permanent change in behaviour that results from experience" (McShane, 2001). As such, these paradigm shifts are necessary pre-requisites to the kinds of changes, and the types of learning, that can be achieved through the application of the principles of Universal Instructional Design.

PARADIGM SHIFT #1
A CHANGING STUDENT POPULATION

In a typical college classroom of 50 students there may be 15-20 students who require a more accessible curriculum to be successful. This is that 'second' group of students who may not learn in the manner in which many teachers teach. Their success depends on a 'good fit' between their way of learning and teachers' instructional methods. We have, for many years, expected this group of students to adjust to their teachers' methods of teaching even when those methods did not match students' ways of learning. As a result, many less 'academically skilled' students did not succeed. They are that group who do not learn without such considerations and who require and are entitled to design, delivery and evaluation methods that support their strengths in learning.

50 POSTSECONDARY STUDENTS

- 4 WITH AUDITORY LEARNING DISABILITIES
- 1-3 WITH MEDICAL CONDITIONS
- 1-2 WITH VISUAL / ORGANIZATIONAL LEARNING DISABILITIES
- 2-4 WITH MENTAL HEALTH ISSUES
- 5-8 WHO ARE UNDERPREPARED
- 1-2 WITH VISUAL OR HEARING IMPAIRMENTS
- 1 WITH LOWER ABILITY
- 2-4 WITH ATTENTION DEFICITS
- 1-3 WITH MOBILITY LIMITATIONS
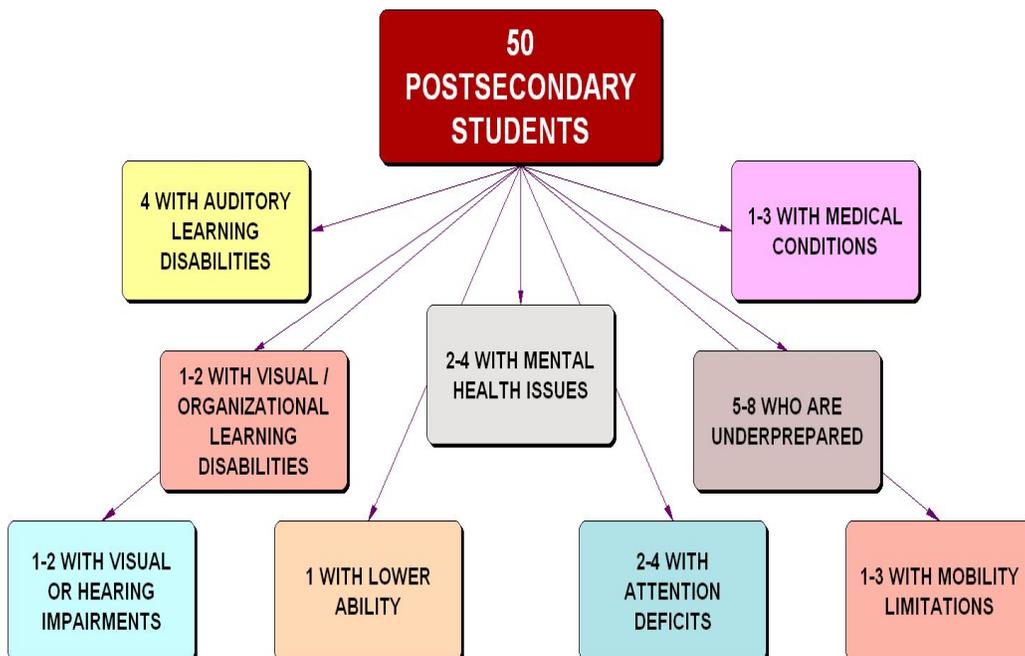
These estimates have been drawn from population indices for the various disabilities (see web references). With little statistical information on the current college or university prevalence available, the figures reflect the general adult population prevalence. While they are, therefore, reasonable estimates, they are not specific to the postsecondary setting. The point is, however, that the increasing diversity of the postsecondary classroom means different ways of thinking about and practicing our profession. Not only are we receiving a changing student population in postsecondary education but also within this changing population the diversity of students' skills, needs, experiences and expectations is increasingly broad. Many of these students at one time would not have considered or been able to take full advantage of postsecondary education opportunities.

We have increasing numbers of students with specific learning disabilities and attention deficits attending our programs due to the work that has been done with and for them in their secondary school programs and due to the increase in access to support services for them in colleges and universities. Students with mobility impairments can now navigate the improved access within postsecondary institutions. Students with medical problems, as a result of improved health care services, can attend school on a full or part time basis. Students with mental health concerns, again with good support services, can handle the demands of a postsecondary program. Students with vision and hearing impairments will now find, with improved access, technology and support services that they can succeed in postsecondary education.

We also have the challenge of students arriving in our postsecondary programs who, while meeting the admission requirements, are considered 'underprepared' for postsecondary work. With no identified disabilities, they do not demonstrate adequate skills in listening, note taking, time and task management, study and test taking skills, reading comprehension and information management to do well in college and university courses. Their numbers appear to be increasing.

Research over the past two decades, and in particular the recent work of Ontario's Learning Opportunities Task Force, has given us a wealth of information about how to enhance the academic performance of students with specific learning disabilities and by extension students with other disabilities. We have a better understanding of what constitutes accessible learning. We have also demonstrated that students with specific learning and other disabilities, when presented with accessible curriculum and supported by entitled accommodations, have retention and success rates comparable to those of their non-disabled classmates. This has prompted teachers to reconsider their role and responsibility in providing such learning environments and the design, delivery and evaluation practices that will support success.

STUDENTS WITH DISABILITIES AS BENCHMARKS

Students with disabilities and in particular students with specific learning disabilities (who constitute about 50% of all students with disabilities in postsecondary education) are the benchmarks for best practices in postsecondary teaching and learning. Their response and their academic success are the 'litmus tests' of our success in 'building accessible learning communities.' That is, *if the design delivery and evaluation of curriculum improves the accessibility of course content for these students then we can have increased confidence that the content will be more accessible to all students*.

As such, students with specific learning disabilities do what they have always done. They test, redefine and extend our capacity as educators to provide them and all students with fully accessible education.

Thanks to the work done in the field of specific learning disabilities in the past twenty years we know a great deal about the ways in which these students learn. This information helps us to understand the merit of instructional best practices as defined by the principles of universal instructional design and adult learning. It is useful as well in defining accessible course content and the intervention required to make content accessible. Within our project, and in others, it has been clear that students with specific learning disabilities benefit from the teaching activities listed on the following page.

TEACHING REMINDERS FOR
STUDENTS WITH SPECIFIC LEARNING DISABILITIES

1. They can achieve at the same level as non-learning disabled peers when their needs for **alternative ways to process information** *and* **demonstrate learning** is met.

2. They benefit when they have **advance organizers**. These students need time to process information. An advance organizer can help them to prepare for and enable them to participate more fully in class.

3. They benefit from the appropriate **use of technology**. Technology is a key element of UID. For example, students benefit from a course based website that provides them with information and lends itself to such things as text-to-voice software.

4. They require **exceptional clarity** in terms of expectations, concepts and information. UID provides such clarity by identifying key concepts, linking information to concepts, creating associations and providing alternate forms of information.

5. They benefit when their **instructors understand the nature of those disabilities** and the differentiated manner in which these students process information. Teachers need to understand and appreciate the learning abilities, preferences and styles of a diverse group of learners.

6. They benefit from **increased student and teacher interaction**. When they are not marginalized by the design, delivery and evaluation of the course, they can participate fully and engage with other students and with their teachers. When delivery and evaluation methods do not allow them to choose and use their learning strengths they tend to withdraw and underachieve.

STUDENTS WITH DISABILITIES AS BENCHMARKS

There are at least three ways that teachers can use students with disabilities as benchmarks for success in ensuring accessibility of their course content and delivery. These teachers can:

1. ***They can improve their own understanding and skills.***
    a. They can begin to do their own homework and learn about the various challenges and strengths of students with specific learning and other disabilities. Resource materials are readily available through provincial associations and a sample of these websites is included later in this guide. For example, when teachers hear the term 'mobility impairment' most think of students in wheelchairs or who use canes to maneuver the hallways. Mobility impairment, however, also refers to those students whose mobility is limited by such things as a variety of medical conditions (diabetes, chronic pain, fibromyalgia and asthma to name just a few), problems with balance and motor movements due to head injury and those with short term injuries for the duration of their recovery.

2. ***They can institute feedback mechanisms by which students with disabilities can provide direct positive and corrective feedback.***
    a. They can inform their students in the first class of their intention to provide them with an accessible curriculum (in their own terms) and encourage all students, and in particular students with disabilities, to provide them with positive and corrective feedback.

b. They can include a similar statement in their course outline, course supplemental syllabus and website.
c. They can regularly check for student feedback to ensure that their efforts are being effective and recognized.

3. ***They can develop links to and relationships with specialists from their student services department who can advise, assist and support them in making design, delivery and evaluation changes that respond to the unique and diverse learning needs of students with disabilities***.
    a. They can review the organization of course content and in particular the resource materials and activities that they will use to support their teaching.
    b. They can become familiar not only with the services that are provided but with the people who provide those services so they can act as facilitators to connect students with support services that can assist them.
    c. They can be alert to the kinds of in-class and assignment behaviours that may reflect the presence of difficulties and take appropriate action to determine if support may be helpful.

It is our conviction that providing an accessible curriculum **benefits** all students. That is one of the 'universals' in Universal Instructional Design. However, as students with disabilities may **require** such practices in design, delivery and evaluation in order to succeed, their confirmation of accessibility is most important in evaluating teacher effectiveness.

PARADIGM SHIFT #2

**A SHIFT IN OUR THINKING ABOUT
THE TEACHING AND LEARNING PROCESS**

*"The art of teaching is the ability to arouse the natural
curiosity of learners for the express purpose of teaching them
how to satisfy it. It is the ability to make the new seem
familiar and the familiar seem new." Samuel Johnson*

Education has always been about teachers and students. The terms 'teachers' and 'students' are used deliberately in this guide, knowing that those who practice this teaching art are referred to by other names – instructors, professors and facilitators. The terms teacher and student are selected intentionally as these terms best describe the two complementary and interactive roles. Teachers teach because they possess a body of knowledge and experience they wish to share with students. Teachers have subject matter expertise. They share with students a responsibility for their students' acquisition of knowledge, skills and talents through the teaching and learning process. With each generation of teachers, we accumulate knowledge about this process. We take that experience and blend it with developing instructional methodologies, information about the learner population and innovative technologies to produce the science and magic that define the teaching and learning experience.

We have had and do have many types of teachers. We have, however, had two principal types of learners, two quite distinct groups of students. The first group includes those students who can learn in the manner in which most teachers teach. They would learn well in almost any academic environment. Their 'student skill sets' are robust and they succeed in school regardless of their teachers' instructional methodology or ability to

design and deliver content or evaluate achievement. These students can adapt to the various styles of their teachers. They are flexible learners.

There is a second group of students that consists of those who do not learn in the manner in which many teachers teach and whose success depends to a large degree on a 'good fit' between their way of learning and the teachers' instructional methods. We have, for many years, asked and expected this second group of students to be accountable for adjusting to their teachers' various methods of teaching. We did so even when those teaching methods did not match students' various ways of learning nor accommodate their disabilities. As a result, many less 'academically skilled' students did not succeed at the elementary and secondary school levels. Since many did not graduate from their high school programs, few of these students had the opportunity to succeed at the postsecondary level.

In the early 1980s in Ontario we began to pay more serious attention to these students. They were now considered to be and labelled as 'exceptional' students. We viewed them as 'challenged' by a variety of specific learning and other disabilities. Legislation was passed and resources were allocated with the intention of supporting their learning. However, these changes and additional resources did not do much to change the fundamental practices of classroom teaching nor provide significant supports to regular classroom teachers. Rather, these changes provided various forms of 'add-on' assistance resource programs and even distinct special education classes. The result was a second and often parallel 'special education' system that had its own budget, staffing, policies and procedures and administrative infrastructure.

While many students did find their academic experience improved, integration with the regular education stream was at first uncommon and only later became the established practice. Even now, meaningful integration is inconsistent and students with learning and other disabilities – as well as variations in their learning preferences – do not always have their diverse learning needs met in regular educational programs.

Teachers in postsecondary education have moved a long way from the historical and unidirectional instruction ('I teach and they learn') to the use of a wide variety of teaching methodologies that respond to the changing characteristics of our student population. They have accepted this shared responsibility for the 'student learning' component of their teaching. For many college and university teachers, it is an enhancement of what they already do rather than a comprehensive move to a new way of doing things. They teach in consideration of accessibility, flexibility and an understanding of adult learning principles.

On the other hand, there are some teachers for whom this will appear an overwhelming challenge. For that reason, it is recommended that the transition to the implementation of Universal Instructional Design principles in their courses be a gradual evolution, following an established plan of action, and that they build upon small successes rather than attempting an across-the-board restructuring of their course.

The principles of adult learning that have underscored postsecondary education remain integral to the teaching and learning process and we outline some of these key principles on the following pages.

ADULT LEARNING

The term "adult learning" means various things to various people. Stephen Brookfield (Brookfield, S. D., 1986 *Understanding and Facilitating Adult Learning*) feels that adult learning is all about "developing in adults a sense of their personal power and self-worth through the transaction of critical reflectivity." He feels this is done by presenting students with alternative ways of looking at their values, beliefs and behaviours so they consider ways of thinking and living they do not already know. http://www.nl.edu/ace/Resources/Brookfield.html

T. A. Angelo writes that 'higher learning is an active, interactive, self-aware process that results in meaningful, long-lasting changes in knowledge, skills, behaviours, beliefs, and attitudes that can not be attributed primarily to maturation.' *(Adapted from Angelo, T.A. (1993). A Teacher's Dozen. The AAHE Bulletin, 45 (8), April 1993, pp. 3-7 & 13.)*

There are several comprehensive and commonly agreed to definitions of adult learning distinct from such concepts as adult education and 'life long learning.' It is perhaps best to conceptualize and describe an adult learning environment as one that recognizes, responds to and reflects the spirit of the principles that follow.

We know that many younger students (now aged 17-18) are entering postsecondary education. Many of them will not have the maturity and experience required to demonstrate these adult learning behaviours and benefit from their application in class. That does not mean that we should not explicitly communicate these principles and encourage and promote

student development in these areas. Our role can be to help them develop these learning behaviours so that they can be fully engaged as adult learners in their postsecondary experience.

Stephen Lieb, Senior Technical Writer/Planner, Arizona Department of Health Services and part-time Instructor at South Mountain Community College, writing in the Fall 1991 issue of VISION, stated "part of being an effective instructor involves understanding how adults learn best. Compared to children and teens, adults have special needs and requirements as learners. He identified the following list of characteristics for adult learners in postsecondary settings:

- Adults are *autonomous* and *self-directed*.
- Adults have accumulated a foundation of *life experiences* and *knowledge*.
- Adults are *goal-oriented*.
- Adults are *relevancy-oriented*.
- Adults are *practical*, focusing on the aspects of a lesson most useful to them in their work.
- As do all learners, adults need to be shown *respect*.

There are many adult learning principles. On the following pages we have briefly outlined principles that have significant relevance for this work. They have been drawn from many sources including our experience and the various sources listed in the weblinks at the end of this implementation guide. It is not a comprehensive list but a representative gathering of principles with relevance to the Universal Instructional Design approach.

PRINCIPLES OF ADULT LEARNING

SHARED RESPONSIBILITY FOR LEARNING
Education is a partnership between teachers and their adult students

TWO-WAY COMMUNICATION
Communication is an exchange of information between two parties who are both willing to listen and able to express themselves

LEARNING THROUGH REFLECTION
Being able to think about our thinking and engage in reflection on information to support association and retention

INTEGRATING NEW IDEAS WITH OLD
Being shown how new information relates to information we have studied in previous courses, classes or life experiences

PERCEPTION OF USEFULNESS OF INFORMATION
Having a clear recognition and appreciation of the ways that information can be used to solve problems or increase understanding

AUTONOMOUS SELF DIRECTED LEARNING
Being offered choice and control over the ways that we learn and demonstrate that learning on demand

SUPPORTED IN EXPERIMENTING WITH IDEAS
Feeling encouraged to use new information and ideas in unusual ways to support learning and application

KEY ADULT LEARNING CONCEPTS

1. ***They are willing and able to take on shared responsibility for their learning.*** We have moved a long way from the 'I teach and you learn' model of postsecondary instruction. While teachers have accepted a growing responsibility for the success of their adult students, they can encourage and should expect students to take responsibility for a share of their academic success. This division of labour should be clearly outlined to students.

2. ***They gain significant knowledge and skills through two-way communication.*** Adult learners need interaction. Communication, the foundation of education, is a dynamic interaction in which our willingness to listen and ability to express ourselves are fundamental skills in an exchange of information. Fostering this interaction in the classroom gives colour and texture to the instructional content.

3. ***They learn through reflection on their and others' experiences.*** Adult learners like to work through examples and case studies to enhance their learning, as well as to hear about the experiences of their teachers and fellow students in relation to the content being presented. This reflection on their own and others' experiences allows students to see how knowledge is, has been and can be applied.

4. ***They are able to integrate new ideas with existing knowledge.*** Adult learners benefit from connections and associations. They have difficulty with information presented in isolation. It is for that reason that the Universal Instructional Design approach emphasizes the logical nesting of course content so that by design, new and

perceptible information builds upon and is connected to previous information. It is teachers' ability to sequence and group information to enhance such association that is so important to student understanding and application.

5. ***They learn best when they perceive information to be useful and to have immediate application.*** Adult learners like relevance and practicality. They prefer information that has immediate and long-term applicability; that is, information that will directly help them to do the tasks that they are studying to accomplish. It is not that they do not appreciate supplementary and often theoretical knowledge. It is that they need useful and applicable knowledge to give new learning meaning and context.

6. ***They learn best when they are offered opportunities for self-directed learning.*** Adult learners like to be able to make decisions about the ways in which they learn. They learn best when they can select their own topics, when that can contribute to the methods by which they will accomplish academic tasks and where they can engage in discovery.

7. ***They learn best when they feel that they are being supported in experimenting with new ideas and skills***. Adult learners benefit from guided supported in trying out new skills, playing with new ideas – or playing with familiar ideas in innovative ways – and testing their competence. The support of teachers in extending learning through experimentation and testing new ideas in a supportive environment contributes in a large way to building their self-esteem as learners.

PARADIGM SHIFT #3.

A SHIFT IN OUR THINKING ABOUT
THE ROLE OF TECHNOLOGY.

It is impossible to deny the impact of technology on the practice of teaching and learning. The challenge to implementing a technological approach, however, is more than just the cost. At this stage, it is enough to say that teachers will have to understand and use an assortment of technology – from overheads to digital slideshows and websites – to deliver an accessible curriculum.

The use of technology is integral, not peripheral, to accessible course content and those teachers who still have fear and resentment toward technology need to find ways to marshal their self-discipline and acquire adequate training and support to ensure that they develop necessary skills in using this technology appropriately and effectively.

It must be acknowledged as well that just as our competence and comfort with technology lie on a continuum, so do the comfort and competence of our students. There is a tendency at times to assume that many of our students, in particular students with direct entry from high school, are computer literate. Sometimes their computer expertise extends only a little beyond computer games and basic word processing. One of the things that teachers should consider in integrating technology is a method of determining the technology competence and comfort of their students.

"I have learned PowerPoint and have started to include this in my class delivery. Rationale: key concepts and significant points are made clear to learners. Also by inputting these presentations into the blackboard course, students who have missed class have the advantage seeing it on their own time. I have become familiar with numerous additional CD-ROM and online resources, games and tools that will be helpful in delivery, resource and as summary tools. Rationale; this exposure increases the students' awareness of resources, validates learning and involves the students through interaction by combining audio and visual mechanisms (technology use)."

The use of technology is an essential pre-requisite to a full implementation of UID principles. In modern postsecondary instruction, the term 'use of technology' refers to the development of some competence in using at least the following list of technology items:

1. ***Laptop computer***. This has become one of the primary delivery tools for course delivery. Its power and portability have made it an essential teaching tool.

2. ***Data projector***. Many colleges and universities now have multimedia classrooms in which data projectors are built into the classroom. In some other settings, teachers have to carry a data projector with them to class. Despite their cost, postsecondary schools are steadily increasing the number of their multimedia classrooms, a confirmation of the importance of this media in teaching.

3. ***Printer***. Most teachers have access to a laser or ink jet printer, either in their own office or through a network connection. The increasing need for colour printing means a move from laser to inkjet printers in many settings. Along with that comes the increased use of individual inkjet printers by teachers.

4. ***Software***. This includes software that teachers need in order to complete course design and delivery – primarily word processing, presentation and spreadsheet software – as well as software designed for students with disabilities. This software includes organizational programs (Inspiration; Mind Manager); Voice to text programs (Dragon Dictate and Via Voice); Text to voice programs (Kurzweil; WYNN; Scan and Read Pro; Read Please); and others.

5. ***Website maintenance***. The use of web-based course support has been made much easier with the introduction of intranet systems in most postsecondary institutions. Two of the most common systems are BlackBoard and WebCT. Each allows teachers to set up courses, upload documents, provide announcements, post grades and even exchange email – among other options. They are user-friendly and student feedback has validated their importance in their success. These websites, whether independently developed or provided through instructional intranet systems, have been significant contributions to practices that reflect the principles of Universal Instructional Design. Their use enables many of the best practices discussed in terms of accessible education. As a result, they are recommended as essential components of the UID approach.

6. ***Scanner***. The scanner is gaining increasing importance as a quick and reliable method for converting hard copy to electronic form. This can be the transfer of diagrams to electronic versions to be posted on a course website or may be the more time-consuming task of scanning a text into electronic format so that students with disabilities can use a text to voice program to have material read to them.

7. ***Digital camera***. Much as with scanners, digital cameras have made the use of graphics easier for teachers and students. Pictures can be directly downloaded to computers in graphic formats, modified and enhanced and then distributed through email and course websites. Newer digital cameras even allow short video clips, with sound, to be taken and distributed.

8. ***Overhead projector***. The overhead projector remains an important technology for presentation of curriculum. It is a viable alternative to electronic slide shows and has the advantage that teachers can mark the overhead transparency as they teach.

9. ***Audio-video equipment***. Videos and audiotapes remain important ways to deliver information in a multiplicity of ways. These respond to the individual learning styles of students (particularly those with visual and/or auditory preferences).

10. ***Flip chart***. The flip chart is a recordable device that enables students to actively chart ideas and information, particularly important for those who need a visual reference and kinesthetic and tactile ways to enhance their learning and retention.

PARADIGM SHIFT #4
UNIVERSAL INSTRUCTIONAL DESIGN

Many teachers recognized the need for change and both educators and researchers began to look for methods that would ensure accessible content and inclusive learning environments. Based on Ron Mace's introduction of the concept of universal design, a number of these groups looked at how to transfer the same concepts to the field of postsecondary education with similar outcomes. In his book, *Universal Design in Education: Teaching Non-Traditional Students*, for example, Frank Bowe modified Ron Mace's principles to some degree. He added details so that the principles might better support academic design and delivery for what he called 'non-traditional' students. His seven principles for Universal Instructional Design include:

1. *The design can be used and marketed to all kinds of people;*
2. *The design incorporates a wide variety of student preferences;*
3. *The product or service is easy to understand and use;*
4. *It works in all kinds of settings;*
5. *The design accommodates error;*
6. *The instructional product / service requires minimal effort to use;*
7. *It accommodates variations in size and position.*

We continued this work in our recent UID research project. For that project, we applied the principles of practice that were developed at **Ohio State University**. These were compiled from North Carolina State University's Principles of Universal Design and were to some extent based

upon Chickering and Gamson's Seven Principles for Good Practice in Undergraduate Education (website below). Chickering and Gamson have done much work in this area and we recommend a review of their work. The University of OHIO working best practices, which we used as a basis for our research project, are presented below:

http://www.acs.ohio-state.edu/grants/dpg/fastfact/undesign.html:

1. *Determine the essential components of the course;*

2. *Provide clear expectations and feedback;*

3. *Explore ways to incorporate natural supports for learning;*

4. *Provide multimodal instructional methods;*

5. *Provide a variety of ways for demonstrating knowledge;*

6. *Use available technology to enhance learning opportunities; and*

7. *Encourage frequent faculty-student contact.*

One of the elements in our approach was the explicit pairing of Universal Instructional Design principles with principles of Adult Learning first developed by Malcolm Knowles and enhanced by those who continued his work. As a result of their work, the work of others in the field of Universal Instructional Design and the work that we have done over the past two years, we have developed a series of best practices to go with the initial principles of Universal Design developed by Ron Mace and his associates. Before getting to those associated best practices, which cumulatively produce accessible content, perceptible delivery and meaningful evaluation, it is helpful to clarify essential terms.

TERMS AND TERMINOLOGY

UNIVERSAL

The essence of Universal Design is flexibility and the inclusion of alternatives to adapt to the many variations in learner needs, styles and preferences

INSTRUCTIONAL

Our focus is clearly and deliberately on increasing 'instructional capacity' in design, delivery and evaluation of curriculum content.

DESIGN

A deliberate and pre-emptive response to changing student needs, abilities and expectations rather than a reaction to the identification of a specific student's requirements for accommodation

ACCESSIBLE CONTENT

Capable of being understood and appreciated, integrated and applied by all students, regardless of learning or other disabilities or individual learning preference

DEFINING OUR TERMINOLOGY

THE MEANING OF UNIVERSAL

"The word *'universal*,' used in the context of Universal Design for Learning (UDL) is sometimes misunderstood. To many people the term seems to imply that UDL is a quest for a single, one size-fits-all, solution that will work for everyone. In fact, the very opposite is true. The essence of UDL is flexibility and the inclusion of alternatives to adapt to the myriad variations in learner needs, styles and preferences . . . the 'universal' in Universal Design for Learning does not imply a single solution for everyone, but rather it underscores the need for inherently flexible, customizable content, assignments and activities." (David Rose and Ann Meyer in Journal of Special Education Technology (15.1)).

Universal implies both inclusiveness and accessibility. Inclusive means that all students can be engaged in interacting with the course content for the purpose of enhancing learning. Accessible means delivering course content in a manner that makes it available and understandable. "What we mean by [this form of] learning, then, is not merely that students have access to material and information. What we mean is that [they] have access to the learning itself, that they experience changes in their knowledge and skills and that they grow in their capacity to learn more." (Rose and Meyer, JSET Journal, Vol. 15.1)

It is also important to understand that universal does not mean lowering or altering standards for performance. "Universal design does not mean that the instructional materials and activities accommodate students by lowering the standards. Universal design is not 'dumbing down' the curriculum. It does not mean that the range of curriculum activity must be narrowed or that teachers find 'the least common denominator' that appeals to the broadest number of students and teach the same thing in the same way to everyone. In fact, *universal design is not ordinarily achieved by uniformity of any kind but rather by flexibility*: universally designed instruction provides alternatives. It is helpful to remember that when using the term universal design for learning, we are speaking of an instructional resource, a means for diversifying instruction to deliver the general educational curriculum to every student, regardless of his or her abilities, and a means for diversifying the ways a student can respond to the curriculum." (Council for Exceptional Children ERIC/OSEP topical brief, 1998) www.cec.sped.org/ud-sec3.html

"I have been making copies of my overheads for three students in one class who are diagnosed as LD. It has made me realize the necessity of doing so for all (students). There will be a lot of time involved scanning notes, redoing lectures, and organizing information for my designated course, let alone the other courses I teach."

THE MEANING OF INSTRUCTIONAL

Rather than the term 'universal design,' or 'universal design for learning,' we chose in our work to use the term Universal *Instructional* Design first proposed by Dr. Patricia Silver. The focus is on increasing 'instructional capacity' in postsecondary settings by building teacher expertise. Included in this idea of 'instructional capacity' are three integrated elements – the *design*, *delivery* and *evaluation* of content and student performance. There are other approaches to Universal Instructional Design and each has merit. Our work, however, has this focus and we believe that it is essential in ensuring fully accessible content in colleges and universities.

"This month's activities have brought me closer to the students; they feel safe about approaching me and discussing their learning strategies. The creative approach in instructional techniques that I have been working on with them in the class has definitely sparked their interest . . . more and more are attending on a regular basis."

A study of curriculum transformation and disability, funded by the US Department of Education at the University of Massachusetts was one of several with similar results. Led by Dr. Patricia Silver, a well-known specialist (http://www.umass.edu/ldss/study.html) they completed a focus group with a small faculty group. They found that faculty members' views or concepts of universal instructional design represented certain attitudes toward higher education instruction and toward specific educational practices that are useful for implementation. They found these teachers:

1. *Hold high expectations for all students*
2. *Want all their students to do well in their course*
3. *Want to be responsive to all of the diverse learning needs presented by students*
4. *Feel that their diverse teaching methods benefit all students*
5. *Expect to maintain high standards*
6. *Believe sincerely that all learners need options in instruction and assessment, and gifted teachers naturally teach in a universal manner*
7. *Are always looking for new ways to teach and to be creative in their instruction; and*
8. *Have been informed of the diverse learning styles by the presentation of diverse learners in their classes (e.g. students with learning disabilities)*

While small in its number of participants, this study outlined a set of teaching characteristics that have been observed time and time again in those seen as models of the teaching profession. These characteristics remain essential values for teachers who wish to implement the principles of Universal Instructional Design to their benefit and that of their students.

THE MEANING OF DESIGN

The perspective is that this approach is implemented 'by design' rather than by dictate or through chance. 'By design' suggests a thoughtful and intentional response to changing student needs, abilities and expectations rather than a reaction to the identification of a specific student's requirements for accommodation. A significant amount of work has been done in the area of curriculum design and redesign to meet the standards of a Universal Instructional Design approach. The University of Guelph, for example, is currently carrying out a project with curriculum design as its principal focus. They are working with faculty to develop curriculum materials and activities that:

- *Ensure a learning space that accommodates both students and instructional methods;*
- *Are accessible and fair;*
- *Are straightforward and consistent;*
- *Provide flexibility in use, participation and presentation;*
- *Are explicitly presented and readily perceived;*
- *Provide a supportive learning environment; and*
- *Minimize unnecessary physical effort or requirements.*

Please check their website: http://www.tss.uoguelph.ca/uid/index.html for additional information about their work and resources related to the design, application and evaluation of resources and materials.

THE MEANING OF ACCESSIBILITY

Accessibility is all about ensuring that knowledge is 'within reach' of all students, that they can influence their own learning and that the information that teachers present is capable of being understood and appreciated, integrated and applied by all students, regardless of learning or other disabilities or individual learning preference. "Access is often viewed as merely the elimination of physical barriers, but must include attitudinal, communication and philosophical changes as well." (Eva Nichols) Beyond simple availability is the need for postsecondary course content to be fully understandable, differentiated and manageable.

"New text provides an easier readability and provides essential information, through use of various methods: many visuals, charts and graphs, real-life pictures. It is more user-friendly and half the size and cost of prior text."

The elements considered when applying the principles of Universal Instructional Design to achieve an accessible curriculum can be grouped under three categories: design elements, delivery elements and evaluation elements. The graphic on the following page provides samples of the kinds of things teachers consider under each category.

DESIGN, DELIVERY AND EVALUATION

EVALUATION
- VARIED METHODS OF EVALUATION
- OPTIONAL FORMS OF PRODUCTION
- INDIVIDUAL AND GROUP MARKS
- MARKING SCHEMES / RUBRICS
- CHOICE FROM ASSIGNMENT MENU
- PEER AND SELF EVALUATION
- MULTIPLE MEANS OF EVALUATION

DELIVERY
- MULTIPLE MEANS OF INSTRUCTION
- COOPERATIVE LEARNING GROUPS
- GUEST LECTURERS
- TEXTS AND OTHER RESOURCES
- APPLICATION OF TECHNOLOGY
- TEACHER / STUDENT CONTACT
- ACTIVE STUDENT PARTICIPATION

DESIGN
- 'NESTED' CONTENT SEQUENCE
- CLASSROOM ACCOMMODATIONS
- SCOPE OF COURSE CONTENT
- IDENTIFIED KEY COURSE CONCEPTS
- EXPLICIT LEARNING OUTCOMES
- COURSE OUTLINE AND SYLLABUS
- VARIED LEARNING ACTIVITIES

COMMON MISCONCEPTIONS ABOUT
UNIVERSAL INSTRUCTIONAL DESIGN

Universal instructional design is a formal educational theory or model that is to be followed precisely

Universal Instructional Design is only for students with specific learning and other disabilities.

Understanding learning style is the same as understanding the accessibility issues related to learning and other disabilities

Universal Instructional Design is 'spoon-feeding' students course content, information and strategies

Universal Instructional Design means watering down the program standards of performance

In Universal Instructional Design, we provide so much information to students that they will not come to class

Simply using technology is the same thing as using technology to support the principles of Universal Instructional Design

COMMON MISCONCEPTIONS

As we carried out our research and in conversations with teachers that preceded and followed this work we identified a number of misconceptions or mistaken assumptions about implementing practices that support the principles of Universal Instructional Design:

1. ***Universal instructional design is an educational theory to be followed precisely.*** Quite the contrary, Universal Instructional Design is a set of principles that provide a convenient and flexible 'basket' in which to place a number of related 'best practices' in postsecondary education. Many of those who work in this area of research are not even comfortable with the term 'model.' In some ways, using any label as a way to collect a set of practices risks having people think that they must undergo wholesale change in order to implement this approach. On the other hand, it is important to name this approach as a way of facilitating communication – and this is a key reason for using the term Universal Instructional Design to establish a foundation for instruction.

2. ***Universal Instructional Design is only for students with specific learning and other disabilities***. This is perhaps the most serious misconception. Universal Instructional Design is clearly beneficial and designed to be supportive for all students. Our feedback from students and feedback in other centres and studies confirmed that students saw the benefits of the design, delivery and evaluation techniques that teachers provided. We maintain, however, as noted

earlier, that students with learning and other disabilities will be the benchmarks for success. If the design, delivery and evaluation of the course allow them to understand and apply the course content, and participate meaningfully, we can be more certain that it improves understanding and application for all students.

3. ***Understanding learning style is the same as understanding the content accessibility issues related to learning and other disabilities***. This is a common misunderstanding in education and one that needs to be clear to teachers. All students have an identifiable preferred learning style or styles. At the simplest level, their preferred style can be auditory, visual or kinesthetic and there are various subcategories to each of these principal styles. Learning style variation is not equivalent to a specific learning or other disability. The two may be parallel or complementary and in that way are related. However, the disability precedes and influences students' preferred learning style(s) as they overlap and interact. It is not that learning style is unimportant. It is essential that teachers understand and apply knowledge of learning style to their course design, delivery and evaluation. It is that it is a different issue than design, delivery and evaluation practices related to disability issues. We have included several links to relevant websites related to learning style in the weblinks section at the end of this guide.

4. ***Universal Instructional Design is 'spoon-feeding' students***. One of the most common responses of students in our research project and in our courses is that Universal Instructional Design is definitely not spoon-feeding. They did not find that this made the content

inherently easier. They did find that it made the content more understandable, differentiated, manageable and applicable.

5. ***Universal Instructional Design means watering down standards of performance***. Quite the contrary, as outlined earlier in this guide, "universal design does not mean the instructional materials and activities accommodate students by lowering the standards." Universal design is not 'dumbing down' the curriculum. It does not mean that the range of curriculum activity must be narrowed or that teachers find 'the least common denominator' that appeals to the broadest number of students and teach the same thing in the same way to everyone." (Council for Exceptional Children ERIC/OSEP topical brief, 1998) www.cec.sped.org/ud-sec3.html In short, then, it is the application of principle related practices that ensure all students have equitable means to achieve the same standards of performance in a course as their non-disabled classmates.

6. ***If we follow Universal Instructional Design methods, students will not come to class***. Teachers worry that providing a course website, for example, will provide so much information to students that they will not attend. Students tell us they choose to attend class based on many factors. Feedback has been that the implementation of Universal Instructional Design in classroom instruction increases motivation to attend and participate since it provides an environment in which they feel engaged and capable. Students have always had textbooks – but still chose to attend class. It is the classroom dynamic that encourages attendance and participation and accessible curriculum offers increased motivation to attend. In addition, if we are

able to provide a learning environment where some students can be successful without attending all classes – should that choice not be available to them? There are some students for whom the least enjoyed part of education is classroom experience. Perhaps we should offer them alternatives to on-line or distance education programs and allow them to attend school without having to attend all classes to succeed.

"This month's activities have brought me closer to the students; they feel safe about approaching me and discussing their learning strategies . . . The creative approach in instructional techniques that I have been working on with them in the class has definitely sparked their interest . . . more and more are attending on a regular basis."

7. ***Using technology is the same thing as using principles of Universal Instructional Design****.* Technology is becoming a critical element of the Universal Instructional Design approach to building accessible learning environments. However, it is little more than a tool in the hands of competent teachers. Instructional capacity – the growing skills and competence of teachers to use technology in a skilled and meaningful way to provide that accessible curriculum content is the key ingredient. Using PowerPoint appropriately and effectively does support the intent of the approach, while using it inappropriately and ineffectively does not. Our students refer to this latter use as 'death by PowerPoint.' It would be incorrect to assume

that, for example, putting information on a course website is meeting the standards for best practice. That would only be true if students had easy access to the site and if the information on the site was 'perceptible information' delivered in ways that students can find it understandable, manageable and useful – including being accessible through text to voice screen reading programs. Technology must be used appropriately and effectively to be a support to the implementation of Universal Instructional Design principles. That use is one that seamlessly integrates technology at all levels (low to high tech) with traditional curriculum delivery methods from lecture to group work. It is that seamless integration that allows technology to serve our needs rather than dictate them.

"Lectures and lab/workshops were designed to engage the students in active learning, to offer them the opportunity for self-directed learning when possible and to allow them to use their own experiences to integrate the course material. The students were treated with respect and were given the opportunity to discuss issues related to the course material or other topics they wished to discuss via small group discussions, one-on-one meetings, and via email. The course was delivered with an understanding that the students were adults who could take responsibility for their own learning with guidance and assistance from the course instructor and teaching assistants, as well as from each other."

" My focus has shifted from content to a skills based course. Content has become the vehicle through which skills can be taught to students to enable them to continue in their study of history, or another social science/humanity."

"The learning outcomes have moved away from content to skill. After six years of teaching it is apparent that students retain little of the content they are exposed to unless they continue to use it. What remains with them are the skills."

"A list of the intended learning outcomes can be found on my web site (they are being posted this weekend), and will be discussed in the first class of the year. Through the course students' attention will be drawn back to these goals."

"I am increasing the range of options and flexibility. So far, I have done this on an ad hoc basis -next year, it will be a formal part of the course and will be covered in the syllabus."

PREPARATION
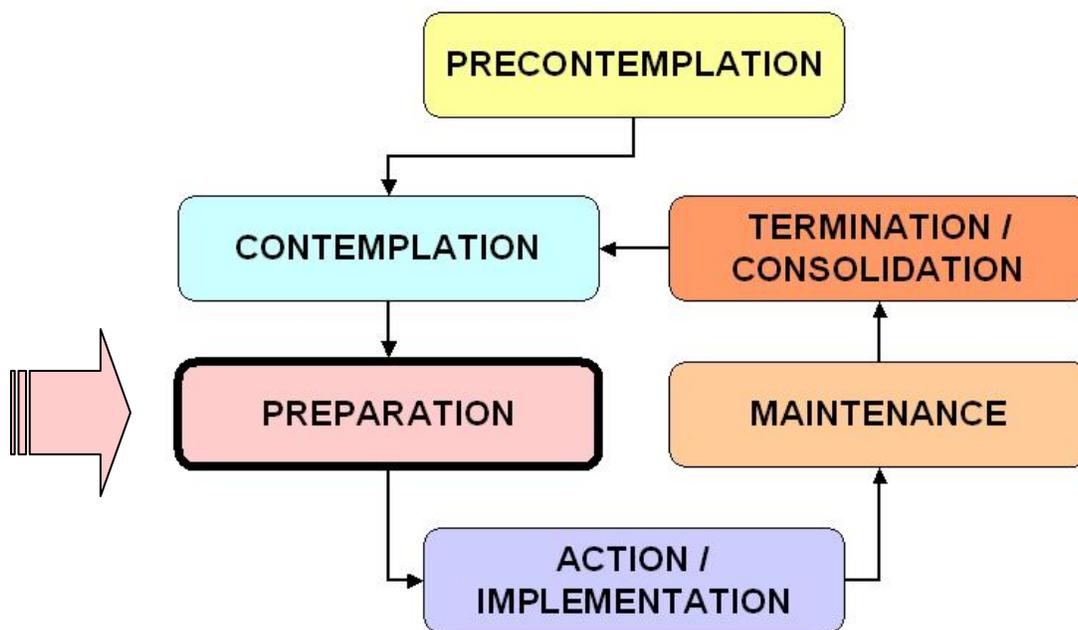
"Talent alone won't make you a success. Neither will being in the right place at the right time, unless you are ready. The most important question is: 'Are you ready?'

(Johnny Carson)

THE G.A.T.E.© TO SUCCESS

GOALS

"First you write down your goal; your second job is to break down your goal into a series of steps, beginning with steps which are absurdly easy." Fitzhugh Dodson

ATTITUDE

"Take the attitude of a student. Never be too big to ask questions. Never know too much to learn something new." Og Mandino

TECHNIQUES

"The more technique you have, the less you have to worry about it. The more technique there is, the less there is." Pablo Picasso

EFFORT

"Great changes may not happen right away, but with effort even the difficult may become easy." Bill Blackman

ESTABLISH GOALS FOR IMPLEMENTATION

A goal is an intended outcome, a specific and detailed
description of the results of our planning and effort.

1. Set **S.M.A.R.T. goals.** These have 5 common characteristics:

S<u>pecific</u>	You must clearly articulate the intended outcomes of your efforts. Saying that you will improve course accessibility is not the same as outlining the specific and concrete steps that you will take to do so.
M<u>easurable</u>	You must quantify and qualify the outcomes of your efforts. How often, for how long, how many, how much and so on are the quantitative labels that goals should include. It is not that qualitative narratives are not important in the goal setting and review process. It is that they do not provide the same impact as numbers.
A<u>chievable</u>	The intended outcome must be reasonable given your time, expertise, experience and resources. We want to set goals that have an element of challenge, that move us forward, without setting unrealistic goals that will set us up for failure and discouragement.
R<u>elevant</u>	The intended outcome must be directly related to the achievement of course objectives through developing an accessible course. Buying new technology may be nice, but a commitment to purchasing technology with a specific application in mind is more relevant.
T<u>imed</u>	You must set timelines for reaching your goals or your benchmarks along the way. Every plan has benchmarks, small accomplishments that we recognize and calculate and which confirm our progress toward goals. Timing sets specific review activities.

2. **Sample goal** statements:
    a. "By August 15, I will have reviewed the course text book and evaluated the most appropriate sequence of content for achieving the intended course outcomes."
    b. "By September 20, I will have developed a series of cooperative learning activities that will complement the course content I intend to deliver."
    c. "By October 01, I will have developed a course based website that will allow students to access course information, course documents and assignments."
    d. "By November 01, I will have acquired an electronic copy of the course text from the publisher or will arrange with student services (or Information Technology) for the production of an electronic copy."

3. **Start small**. The challenge for teachers is to set achievable goals that test their capacity – finding that delicate balance between goals that are too easy or too difficult. We suggest that in the beginning you set at least one goal to implement under each of the UID principles. Allow yourself early success – and only then go further. The concept is one of taking 'baby steps,' beginning with a 10% change in teaching practice that is consistent with your current preferred teaching methods and yet a move toward a broader implementation of Universal Instructional Design principles through the modification of current or the implementation of new teaching behaviours.

4. **Draft a written work plan**. Design a written plan for yourself that outlines in very specific terms what you intend to do, in what manner and by what date. Then refer to this plan regularly to recognize and document your progress along the path to success. Later in this guide we offer one form for your plan – the P.A.C.E. template. Few people like to make formal plans – fewer still will follow them. But even fewer would argue the merit of a logical and reasonable plan, with clear goals, a list of well-defined activities to achieve those goals, detailed benchmarks for progress and clear time lines for taking stock of progress toward our goals. Give the obvious benefit of a plan and the challenge of making some of the changes that may need to be made, the merit of doing so outweighs the work involved in doing so.

"I have not modified anything; however, I have changed my instructional style in the way that I am more acutely aware and more confident of the suggestions that I have made regarding insightfully responding to students' needs. The subsequent learning strategies that I have introduced reflect my growth, experience, and knowledge about effectively meeting diverse students' needs."

ESTABLISH A POSITIVE ATTITUDE

Attitude is defined as a set of expectations that result from the way in which we explain experience to ourselves.

By intentionally altering our teaching and learning experiences, we change the way that we interpret and explain them, leading to changed attitudes. It is important to remember the following tips.

1. **Do not rush**. Sometimes the best friend you can have is a solid determination not to be rushed. Allow yourself time to complete the necessary preparatory work. We know that a careful and considered approach to change is better than a hurried and half-hearted one and it is important to maintain this attitude.

2. **You share the responsibility** for student success with your students. Expect that as you try different things you will learn more about your own teaching. For example, try to embrace the use of cooperative learning techniques. Research has shown that teachers who use 'group work' and who really understand the most effective ways to do so find it an exceptional instructional activity. Research has also demonstrated the value of cooperative group work, done properly, in enhancing student achievement and in supporting the principles of adult learning.

3. Think always in terms of **measurement and evaluation**. Consider the varied means by which student learning, student satisfaction, your success and satisfaction and the achievement of intended learning outcomes can be measured.

USE THE BEST TECHNIQUES

Techniques are defined as strategies, schemes, approaches, methods, routines, patterns, habits or practices that enable us to achieve intended goals.

1. Understand and competently apply the **principles of Universal Instructional Design and Adult Learning** in your teaching. A number of resources are referenced later in this guide and it is suggested that you review these;

2. **Learn about the needs of students with disabilities.** At other places in this guide we offer suggestions for doing so. Teachers who do not have an understanding of the individual requirements of students with various types of disabilities will not be able to identify design, delivery and evaluation changes they need to make. They will also not be able to benefit from feedback from these students as their benchmarks for successful implementation of UID principles.

3. **Extend and enhance** lectures, activities, exercises and resource materials to supplement instruction. Learn the most effective ways to teach to diverse students groups. Practice those techniques in low risk settings so that you are comfortable and competent with them to a degree that allows you to adapt to changing circumstances.

4. **Develop technology skills**. Efficient and competent use of the various forms of technology that support the implementation of UID principles is important. Every postsecondary institution has staff that

can assist teachers in overcoming anxiety about technology and then developing competence and even expertise in its use.

5. Understand and incorporate both an understanding and an appreciation of various **learning styles**. Students, including students with learning and other disabilities, have learning style preferences. Teachers need to understand these styles – generally described as visual, auditory and kinesthetic – and the specific design, delivery and evaluation methods that complement these various styles for understanding and integrating knowledge.

6. **Understand your population of learners**. As noted earlier, gain an understanding of the strengths and challenges of the various types of disabilities and learning preferences and the varied and various skill sets of your students. Perhaps an initial screening survey (even if it must be anonymous) completed during the first class can provide you with information that can help you in your planning.

7. **Plan for data gathering and analysis**. Institute your own evaluation of student satisfaction with your design, delivery and evaluation and analyze their responses to continuously improve your skills. This could be your personal list of 'key performance indicators.'

8. **Acquire a coach or mentor**. It is always helpful to have someone who can guide you through potential detours and hazards. If you can find another teacher who can play this role, even if it is just someone to bounce ideas off or with whom to have discussions about problems or possibilities, it will help you feel supported.

DETERMINE HOW YOU WILL SUSTAIN EFFORT

Effort is defined as the sustained commitment of energy, time and resources in the face of obstacles and distractions.

1. Set aside **adequate time** to allow you to maintain changes. Teachers in our pilot project – almost without exception – stated that they could not imagine making the transition into using these principles and techniques without adequate time for contemplation, preparation, implementation and maintenance. No matter how much time you think you will need – allow for more.

   "With all the extra hours of planning and preparation, especially the online content, I was exhausted . . . however, this semester I am running the same program and with much of the preparation work already done and the web pages already designed, my workload is cut down considerably . . . Would I do it again? No way, not without release or prep time."

2. **Maintain the modifications** during initial teaching periods and until these techniques become embedded in your teaching. Sometimes the best approach is to do the right things long enough to make a difference. If you have written S.M.A.R.T. goals, you can measure your maintenance against those goal statements. This is an important element in success, since after early implementation there will be challenges to maintaining the techniques you have established.

3. **Prepare the scope and sequence** of course content. Many teachers in postsecondary education have not been trained in curriculum design. If you do not have such formal training in course/curriculum design, it is helpful to identify the resources in your institution that can provide you with this training and consultation. Most colleges and universities have departments whose role includes teacher support in course design, delivery and evaluation. These designated centres for instructional support may have a variety of names.

4. **Use your mentor/coach**. Find a mentor with whom you can work as you build your competence and experience at implementing Universal Instructional Design. Your mentor can help you stay focused when distractions and obstacles challenge your persistence. Mentors also know how to handle obstacles that may seem insurmountable to you.

5. **Self-evaluation/reflection**. Incorporate into your end-of-semester review a reflection on your own application of Universal Instructional Design methods and the outcomes they have achieved for your students and yourself. Later in this guide we present one format for such review, reflection and revision and this can serve as a template for teachers who wish to develop and use their own formula.

6. **Expect success**. If you have established a solid foundation for moving forward with teaching techniques that will reflect the UID principles in action, have adequate resources and a plan, you will do well. With commitment and confidence, success is the result.

ACADEMIC ACCOMMODATIONS
AND UNIVERSAL INSTRUCTIONAL DESIGN

People often ask if moving to a Universal Instructional Design approach is a lot of work. The short answer is 'yes.' The long answer is 'absolutely!' The only place that success comes before work is in the dictionary. The initial and ongoing work varies from teacher to teacher and we recommend a planned step-by-step approach that does not overwhelm those who sincerely want to teach with 'best practices.' The table below outlines what some teachers view as low, moderate and high demand Universal Instructional Design strategies/accommodations:

SAMPLE ACCOMMODATION GRID

This table outlines some of the Universal Instructional Design techniques and strategies. They are divided into low, moderate and high demand for teachers in terms of implementation in their courses.	Low	Moderate	High
Providing supplemental materials in addition to the standard course outline	✔		
Communicating a willingness to accommodate various learning styles and disabilities by providing choice/flexibility	✔		
Maintaining a course website that meets all of the established accessibility standards			✔
Placing a preview of each class on line in advance or providing advance organizers that assist students in preparing to participate in class		✔	
Providing written material – such as overheads and notes – in advance (on disc or course website)		✔	
Putting notes and overheads on the course website within 48 hours of the class		✔	
Developing study guides for the course, in particular for components of the course that might be difficult			✔

This table outlines some of the Universal Instructional Design techniques and strategies. They are divided into low, moderate and high demand for teachers in terms of implementation in their courses.	Low	Moderate	High
Offering alternate forms of assignments			✔
Providing detailed marking schemes for assignments		✔	
Providing alternate forms of tests and exams			✔
Providing extra time for tests and exams	✔		
Building in teaching modules on specific course-related learning strategies			✔
Learning enough about school support services to know how and when to recommend students to those services		✔	
Arranging for a separate place to write tests and exams for students who are easily distracted	✔		
Carrying out a content pre-test to determine level of knowledge of students in the class			✔
Involving students in decisions about key components of the course – and areas for emphasis		✔	
Providing opportunities for students to use past learning and experience in the course		✔	
Using a variety of teaching methods (lecture, group discussion, small group activities, individual self assessment, demonstration, case studies and so on)		✔	
Using posters or other methods to emphasize the important information in class		✔	
Being available to see students within 48 hours of a request for a meeting		✔	
Responding to student email and voice mail within 24 hours of it being received			✔
Providing regular feedback to students on their performance in the course			✔
Using cooperative learning activities to support students learning and achievement		✔	
Using guest lecturers for specialized topics and ensuring that their presentation is supported by advance organizers and summary information		✔	
Providing extra copy(ies) of course text in library on reserve for student use	✔		
Ensuring the availability of an electronic version of the text for the course – a full version rather than simply the supplementary materials often found on text CDs			✔

This table outlines some of the Universal Instructional Design techniques and strategies. They are divided into low, moderate and high demand for teachers in terms of implementation in their courses.	Low	Moderate	High
Permitting assignments to be handed in for review before submission for marking			✔
Evaluating student satisfaction with instruction on a regular basis so that your course and delivery can evolve		✔	
Developing or encouraging the development of study groups for your course		✔	

Add to this list for yourself, using the space below:

One of the things that I have to look at differently is the use of activities in the classroom. I like to use self-assessment tools, handing out checklists for students to do as a baseline for discussion. From an 'accessible to all' perspective, I have to ensure students have these checklists in advance. Some with short attention spans, reading difficulties and conceptual problems need significant time to work their way through such checklists and process information well enough to participate in classroom discussions.

I like to use 'buzz groups' and work groups as part of the instructional process. However, for many students, the group experience is challenging and at times overwhelming. Talking with colleagues, I have found three ways to make this activity broadly accessible. First, I give advance warning of the intention to use groups for a specific topic and offer supports to those who have anxiety about being in groups. Second, I provide advance briefing information so that students know what the issues are to be discussed and can think about their contribution and participation. Third, I define the group process in context and provide sample exercises to demonstrate to students the way that I want groups to work in the course.

IMPLEMENTATION
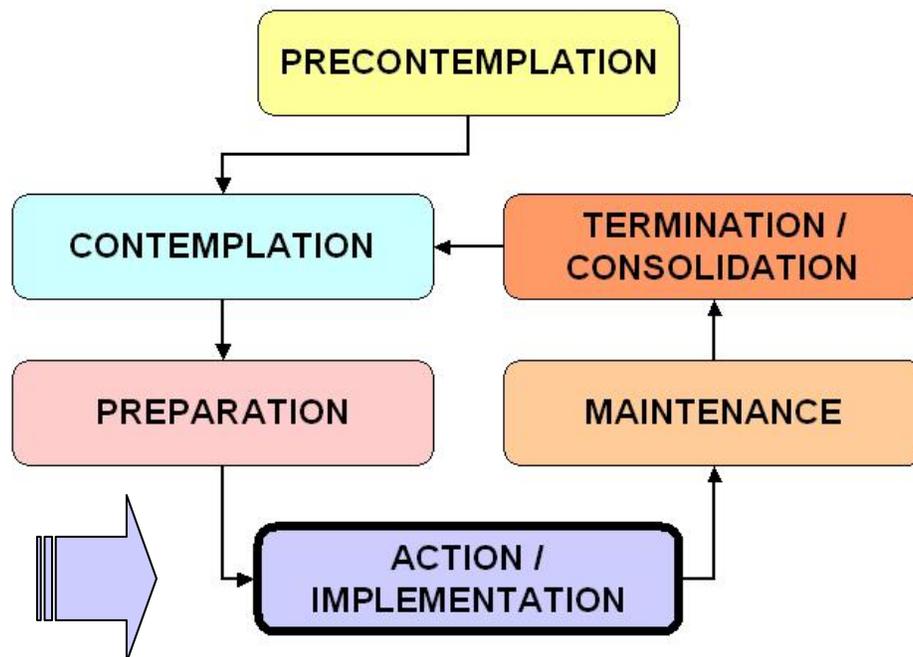
"It is the nature of thought to find its way into action, but action springs not from thought, but from a readiness for responsibility." Dietrich Bonhoeffer.

GETTING STARTED

Start Small

The information in this guide, and in the resources cited at the end, can seem overwhelming. For that reason, it is recommended that teachers start small. Select a few techniques or strategies that are extensions of what you do now and then implement them successfully. Change is cyclical – succeed at small changes and then move forward with others.

"I realized how frustrating and time consuming it is to develop Web content. I need to go back to the simple lesson-planning template for each of my classes. This will cause me to take the extra time to actually plan the lesson in it's entirety and to evaluate the best way to deliver the content to best suit my learners."

Be Clear

Know exactly what you want to accomplish with the changes that you intend to make. We frequently remind ourselves and others of the need to be clear when we are setting expectations and providing feedback to students. We need to be equally clear with ourselves about what we want to accomplish, in what time frame and with what resources. One of the best ways to do this is to work backward from your intended outcomes. Knowing what you intend to accomplish can help you to list what you need to do, what resources you need to acquire and what other supports might be required to achieve those outcomes.

Tolerate Your Limitations

You cannot do everything. No one can. Select the changes that will best suit your style, the course content and learning outcomes and the needs and expectations of your students.

"I need more time to work on all of the many plans I have for me to do. Seems I have not yet made near the progress I had originally intended on. Not sure if others are feeling this way or not."

"I continue to be frustrated by my lack of understanding of the basic language of UID and education and learning disabilities in general."

Ask for Help

There are many teachers who, whether they call what they do Universal Instructional Design or not, apply these principles in their daily work. There are many others who are consciously working their way toward a more robust implementation of these principles and techniques. Where it is possible, align yourself with these teachers and use your collective experience, knowledge and motivation to move forward together while supporting each other's effort.

Keep Good Records

This is one of the more challenging things for most of us. Keeping notes about what we do, how we do it, what resources and materials we found most helpful – and so on – can save us time in the future. It is also a

strong foundation for sharing knowledge and experience with our peers as a means of supporting best teaching practices.

Celebrate Your Successes*.*

Take time to recognize your own successes and accomplishments. Reward yourself with at least a pat on the back for each successful change in design, delivery or evaluation. In a journey, each small destination deserves to be recognized and enjoyed.

Complete a Start . . . Stop . . . Continue chart

Take a piece of paper and divide it as shown on the following page. Label the sections Start, Stop and Continue. In the Start section, list the design, delivery and evaluation techniques that you will ***start to do*** – those that you do not already do but have decided to put into place. In the Stop section, list those design, delivery and evaluation methods that you will ***stop doing*** as a result of your contemplation because you have found better methods. Finally, and most important, in the Continue section, list your strengths in design, delivery and evaluation, those things that you do well, that support student achievement, that ensure the accomplishment of course learning outcomes and that you must ***continue to do*** and not lose sight of as they are keys to your success as a teacher. Within paradigm shifts is the danger of losing sight of our best qualities and practices – this chart ensures you will not.

UNIVERSAL INSTRUCTIONAL DESIGN START . . . STOP . . . . CONTINUE CHART

START	STOP	CONTINUE
Practices that I will begin to include in course design, delivery and evaluation that will support UID principles	Practices that I will no longer use in order to enhance a full implementation of UID principles	Practices I will continue to use that already reflect my implementation of UID principles

"It has been hard to find a good text for this course that is in electronic format. I have been doing some reading about what makes a text a good one – a mix of text and graphics, lots of white space, good font selection and size, advance organizers, summaries, chunking of content for each chapter and readable language. I think I can find one that has most characteristics but I will probably have to have the electronic version, that can be read by Kurzweil, created within the university IT services."

"Students in my course are not happy with the text we are using. It was not my choice, and it is not a very good book, so we do not use it much. On the other hand, it was an expensive book and I feel obligated to use it as much as I can since they all had to pay for it. I will be looking for a better text for next year."

"I have been considering moving away from a formal text and moving to develop a course pack, but I am concerned that putting the coursepack information into electronic form will be even harder that doing so with a text. I will have to talk with our computer lab people and the publishers."

PRINCIPLES OF UNIVERSAL DESIGN
IN EDUCATION

EQUITABLE USE
Identical opportunities when it is possible, equivalent when not. This principle is about fairness and equity.

USE OF NATURAL SUPPORTS
Building in and connecting students to the range of natural supports that are available in postsecondary settings and integrating supports currently provided outside the classroom into the classroom where that is possible.

SUPPORTIVE LEARNING ENVIRONMENT
Putting into practice the essential principles of adult learning so that the classroom is a welcoming, positive environment that encourages attendance, participation and interaction.

PERCEPTIBLE INFORMATION
Ensuring that all information that is provided, in all forms and formats is fully understandable, differentiated, manageable by the diverse student group and applicable to their learning needs.

MULTIPLICITY IN DESIGN, DELIVERY AND EVALUATION
Using course design and delivery to present information and evaluate performance in a variety of ways that accommodate the broadest possible range of student preferences and strengths.

FLEXIBILITY IN USE
Accommodating a wide range of skills through choice and menus of options and being prepared to make accommodations and adjustments where they are required to support student success.

THE PRINCIPLES
WHENCE AND WHY

EQUITABLE USE: Identical opportunities when it is possible, equivalent when not. This principle is about fairness and equity and is from the original group of principles put forward by Ron Mace and his colleagues. Equality and equitability are fundamental and we could not see a system in which this was not an essential principle.

USE OF NATURAL SUPPORTS: Building in and connecting students to the range of natural supports that are available in postsecondary settings and integrating supports currently provided outside the classroom into the classroom where that is possible. This principle was adopted from the University of Ohio list that we used in our research and remains a key element. It is part of the process of moving some of these supports, which are most often provided and delivered outside the classroom, into the classroom. It is also about including referrals for such services into course information and instructional practice.

SUPPORTIVE ADULT LEARNING ENVIRONMENT: Putting into practice the essential principles of adult learning so that the postsecondary classroom is a welcoming, positive and nurturing environment that encourages student attendance, participation and interaction. This recommendation comes from our previous work and the recognition of the value of adult learning principles in instructional practice.

PERCEPTIBLE INFORMATION: Ensuring that all information that is provided, in all forms and formats is fully understandable, differentiated, manageable by the diverse student group and applicable to their learning needs. This principle is also from the original group put forward by Ron Mace et al. Perceptible information is important and we could not see a system in which this emphasis on clarity was not an essential principle.

MULTIPLICITY IN DESIGN, DELIVERY AND EVALUATION: Using our course design and delivery methods to present information and evaluate performance in a variety of ways that accommodate the broadest possible range of student preferences and strengths. This principle, adapted from the CAST (Centre for Applied Special Technology) and University of Ohio lists, extends the concept of multiplicity across the dimensions of design, delivery and evaluation and encourages a much wider perspective on the concept of multiplicity in teaching and learning.

FLEXIBILITY IN USE: Accommodating a wide range of skills through the provision of choice and menus of options. This includes being prepared to make accommodations and adjustments where these are required in order to support student success. This principle is also from the original group put forward by Ron Mace et al. Flexibility is for some the principal product of a Universal Instructional Design approach. We could not see a system in which this emphasis on adaptiveness was not an essential principle.

BRINGING THE PRINCIPLES TO EDUCATION

There are several different lists of UID principles, some which are referred to in this guide and others available through information searches. Ron Mace's principles have been the foundation for much of the work. They underlie the current application of UID approach to education. Various individuals (Frank Bowe, as well as Chickering and Gamson) and groups (CAST – The Centre for Applied Special Technology) have adapted these principles to suit an educational context and most stay as close to the original principles as the educational setting and context permit.

This was perhaps the most challenging section of this guide. The entire notion of principles, including the nature and purpose of principles as well as which best represent Universal Instructional Design is a difficult one to put to paper. A review of four different dictionary definitions for principles including such standards as Miriam Webster and Cambridge dictionaries generated a short list of elements of definitions of 'principle' that seemed most relevant to the task. From this perspective a principle is:

- *A basic truth, law or assumption*
- *A rule or standard*
- *A basic or essential quality determining characteristic behaviour*
- *A rule of code of conduct*
- *A basic idea or rule that explains how something happens or works*

Taking a thesaurus approach to the word principle produced an astounding number of relative terms (in the dozens and too many to list) collected under the headings of *laws, morals, fundamentals, beliefs, doctrines, core concepts, rules and methods for simplicity.* Everything from assumption and axiom to scruples, essence, foundation, primary element, concept, credo, heart and explanation were included in the list. Perhaps the most compelling element of the definitions reviewed came in one simple sentence describing a principle as **"*an idea that influences you greatly when making a decision or considering a matter*"** *(Cambridge dictionary).* As a result, a group of six principles were selected that:

- *Reflect the definition of a 'principle';*
- *Are consistent with past and present work in the field of Universal Instructional Design;*
- *Are relevant to the postsecondary educational setting; and*
- *Enable a grouping of significant design, delivery and evaluation activities that support their application*

The goal was a short list of principles, drawn from various sources, which would best support the subsequent development of a set of specific instructional methods and behaviours reflecting a Universal Instructional Design approach to instruction. The list could have been much longer, but the goal was a short, relevant and convenient list against which to connect specific instructional activities.

PRINCIPLE #1
EQUITABLE USE

"In the past I never gave too much thought to different methods of presentation or alternate methods . . . this approach has made me reflect and see what I do from my students' perspective."

The application of the principle of equitable use is evident when teachers carry out the following activities. Please indicate whether you:

	Almost always	Often	Sometimes	Almost never
• *Ensure that the course outline and/or syllabus includes a clear statement about your recognition and willingness to accommodate the needs of students with specific learning and other disabilities*				
• *Are sensitive to hidden disabilities (having developed this understanding through self-education and through contact with student services staff)*				
• *Avoid stigmatizing and segregating users by ensuring that language, examples and activities do not centre out, favour or eliminate specific students or groups*				
• *Build in the instructional accommodations that are required to support the learning of a diverse student population*				

	Almost always	Often	Sometimes	Almost never
• *Avoid jargon and complex terminology (unless that is essential to the course content) and do not talk down to students*				
• *Create study guides and advance organizers so that students who need to preview material in order to fully understand it have the opportunity and resources*				
• *Permit students to submit their assignments electronically via email*				
• *Provide alternate forms of assignments so that students can choose the format that best allows them to demonstrate the achievement of the program standards or course outcomes*				
• *Permit students to submit work for non-graded preview before submitting it for marking so that they can have an opportunity to know if they have understood the assignment and are 'on track'*				
• *Provide detailed information and clear time frames for assignments so that students who require extra time to produce their work can have the information they need to schedule appropriately*				
• *Teach course specific learning strategies as an integral component of the course delivery*				
• *Permit students to use test centres to complete exams when they require a quiet or private space to work*				
• *Provide alternate forms of tests and examinations that enable students to have an equal opportunity to demonstrate learning through their strengths*				

	Almost always	Often	Sometimes	Almost never
• *Ensure that students understand the format for tests and exams well enough in advance to plan and prepare appropriately (e.g. many students do not appreciate the need or understand the process of preparing for an 'open book' test or exam*				
• *Design tests so that students can complete them within the established time frame*				
• *Design activities that encourage and enable all learners to participate in the collaborative process of learning*				
• *Design content and activities with a wide range of student ability and learning preferences in mind*				
• *Use resources available to and appropriate for all students so they can be meaningfully used to complete assigned work*				
• *Make notes available in electronic format or on your course website so that students have access to the new information while it is still fresh and can use text to voice readers where necessary*				
• *Ensure course materials are available in electronic format, on a course website, that are compatible with available screen readers*				
• *Place supplementary materials on library reserve in sufficient quantities to ensure all students have access to the material*				
• *When asking questions of students in class, initially give students the opportunity to 'pass' if they are not certain about an answer so that they recognize that participation is low risk in initial stages*				

PRINCIPLE #2
USE OF NATURAL SUPPORTS

The application of the principle of the use of natural supports is evident when teachers carry out the following activities. Please indicate on the table below whether you:

	Almost always	Often	Sometimes	Almost never
• *Consider the size and space of the classroom to ensure that planned activities are appropriate for approach and use; some classroom setups do not lend themselves to certain activities*				`
• *Ensure a clear line of sight for important elements you present especially information that has a high graphical content*				
• *Present visual information in a size large enough to be seen by those with visual impairments and disabilities*				
• *Integrate group learning (buzz groups, study groups) that builds on the natural curiosity and exchange of ideas among adult learners and allows students to learn from each other and from the interactive experience*				
• *Understand and refer to appropriate supports for students with disabilities through knowing the student services system and making recommendations to students to use those services*				
• *Encourage the use of peer mentoring, the use of tutors, where required, early in the course before students fall behind*				

	Almost always	Often	Sometimes	Almost never
• *Develop or encourage the development of formal / informal study groups that encourage students to work together*				
• *Understand and encourage students to use supplemental instruction programs in those institutions that provide such programs*				
• *Use, are familiar with and encourage student use of libraries and library resources and support services*				
• *Are familiar with and encourage informed student use of the Internet, and understand that while it has limitations, the world wide web has become an essential teaching and learning tool to be incorporated*				
• *Develop and use a course based website as a primary place to put advance organizers, summaries, announcements, course information, notes and slideshows, assignments, marking schemes and grades*				

PRINCIPLE #3
SUPPORTIVE LEARNING
environment

The application of the principle of a supportive learning environment is evident when teachers carry out the following activities. Please indicate on the table below whether you:

	Almost always	Often	Sometimes	Almost never
• *Establish a welcoming environment that has an opening and closing routine to support attendance, participation and learning and to demonstrate a supportive environment*				`
• *Take steps to learn about your students' experiences, expectations, background, goals and potential contributions and then encourage and support students in sharing prior learning and experiences*				
• *Establish a shared responsibility for learning and success and outline clearly those responsibility elements*				
• *Establish, maintain and demonstrate a commitment to two-way communication in the knowledge that communicative interaction enhances accessibility, learning and development*				
• *Design instruction and develop activities that encourage / reward student participation*				
• *Provide and reinforce learning through reflection by ensuring that assignments enable students to reflect on course content. This may require that teachers provide information on strategies for reflection*				

	Almost always	Often	Sometimes	Almost never
• *Ensure that students understand and perceive the usefulness of information by focusing on essential information that has practical application and relates to intended learning outcomes*				
• *Provide opportunities for autonomous self-directed learning that gives students the opportunity to carry out research and assignments that offer them the chance to direct their own learning*				
• *Encourage students to share personal experiences, thoughts, feelings and concerns when appropriate and in a manner that contributes to learning*				
• *Encourage students to express themselves in creative ways*				
• *Plan for the use of a variety of teaching and learning activities that meet different emotional, physical and social needs*				
• *Encourage students to be respectful of each other during activities and discussions*				
• *Support students in experimenting with ideas, encourage differences in opinion and respectful debate as a way to help students find meaning in the content*				
• *Encourage teacher-student student and student-student contact that is meaningful, focused, consistent and structured*				
• *Provide available office hours and set standards for returning email and telephone messages that are consistent and predictable by students*				

	Almost always	Often	Sometimes	Almost never
• *Model meaningful contact with students. Rapport is a continuing, evolving and productive relationship and teachers need to model such relationships*				
• *Minimize any unnecessary physical effort that might impede the participation of those with mobility and medical conditions*				
• *Accommodate variations in size and position for students with specific physical, visual, hearing and learning impairments*				
• *Ensure that where required there is adequate and appropriate seating space for all students*				
• *Make certain that line of sight is clear to blackboards, screens and overhead projections from all locations*				
• *Provide sufficient information about evaluation processes and criteria to prevent unnecessary anxiety about performance*				
• *Provide, at least initially, low-risk activities, in class and in small groups, that encourage students to participate*				
• *Intentionally help students recall what they already know and how it relates to course content and activities*				
• *Ensure that students receive grades promptly so that they know how they are doing in the course*				
• *Complete regular evaluations to ensure that you are responding to the diverse learning needs of your student population*				

PRINCIPLE #4
PERCEPTIBLE INFORMATION

"I have been working on curriculum content delivery techniques to make content more understandable. I have redesigned lessons, creating colourful overheads and creative, more visual approaches for Fundamentals teachers to use. The design has been piloted in two classes and appears to work well. Faculty are interested and excited about the changes I have made."

The application of the principle of perceptible information is evident when teachers carry out the following activities. Please indicate on the table below whether you:

	Almost always	Often	Sometimes	Almost never
• *Determine what you will teach (essential course components) in an accessible manner and clarify what additional information students will be responsible for learning as their part of the shared process*				`
• *List and communicate the key concepts, skills, knowledge and associations you expect students to acquire in order to meet the intended learning outcomes and program standards and the means by which students can accomplish those tasks*				

	Almost always	Often	Sometimes	Almost never
• *Begin each class by identifying the essential course components to be covered and their relationship to intended learning outcomes*				
• *Instruct students by telling them what they need to learn, do and produce to succeed in the course and then connecting assigned work to those elements*				
• *Integrate new ideas with old by connecting course content to previous learning that students have brought to the course and to previously delivered course information*				
• *Choose and use a textbook that supports accessible learning and that comes with a complete electronic version (not just a CD of resources and supplementary materials – although those too are helpful)*				
• *Ensure the course website meets accessibility standards as outlined in the information included in our weblinks*				
• *Preview pre-packaged resources and materials (e.g. videos, CDs, case studies) to ensure that they are compatible with course outcomes and accessible to all students*				
• *Ensure that the use of such presentation programs as PowerPoint meet existing accessibility standards*				
• *Ensure that all documentation (course outline, syllabus) use language that is clear, precise, accurate and grammatically correct*				
• *Repeat what is important in ways that will ensure that students understand that this information is important*				

	Almost always	Often	Sometimes	Almost never
• *Differentiate elements in complex tasks and teach students to break down complex information and complicated tasks*				
• *Present information explicitly in a format easily perceived and understood by students and avoid any unnecessary use of jargon, terminology or 'buzz words'*				
• *Provide clear expectations and regular feedback on content, assignments and additional work to be completed*				
• *Provide expectations in written form on the course outline (or supplemental syllabus) as well as the course website*				
• *Give students feedback that is specific, relevant, timely, frequent and credible (accurate) and offer a mix of positive and corrective feedback*				
• *Develop detailed marking schemes for assignments to ensure that students understand exactly how assigned work will be graded so students can make choices or request flexibility in how work will be done*				
• *Accommodate a wide range of literacy and language skills in the selection of materials and the use of course based terminology*				
• *Make certain that any resource materials and handouts are clear and legible as well as designed with various learning preferences in mind*				
• *Consider and respond to reflection on the need for a course glossary or dictionary of terms for the curriculum content*				

	Almost always	Often	Sometimes	Almost never
• *Develop a straightforward and consistent delivery for course content so that students can predict activities and expectations*				
• *Have a classroom delivery format that has distinct elements to ensure clear information*				
• *Prepare assignments that are clearly related to and connected with the intended learning outcomes of the course*				
• *Determine essential components of the course and focus on the design, delivery and evaluation of these components. Essential is related to content that communicates information required to achieve the intended learning outcomes; supplemental materials that reinforce learning and achievement of intended learning outcomes; and activities that are designed to enhance learning related to intended learning outcomes*				
• *Sequence information consistent with its importance and deliver information in a 'nested' sequential arrangement so new information can be associated with prior learning and new concepts build on those already acquired. Nested content involves sequencing course content so that each lesson builds upon previously delivered information – much like the Russian Matryoshka dolls in which each element incorporates the previous one(s).*				
• *Determine the advance organizers and information that will enable students to come to class fully prepared to engage fully in the curriculum material to be delivered*				

	Almost always	Often	Sometimes	Almost never
• *Develop test and exam questions that clearly relate to the intended learning outcomes of the course*				
• *Ensure that assignment directions and test questions are well enough written to be understood in the same and correct manner by all students*				
• *End the class with a summary of main points related to the intended course outcomes*				
• *Use stories and other examples to support and give substance to information that is presented in the curriculum*				
• *Provide summaries, notes and overheads shortly after class*				

"I have redesigned assignments and modified tests for a number of reasons: to equate the tests more directly to the content taught in the class; to reflect the pattern of learning demonstrated in the delivery method of lesson content; and to level the playing field for students by replacing difficult test questions with ones that more closely reflect the content taught and the time available for students to process and assimilate the work."

PRINCIPLE #5

MULTIPLICITY IN DESIGN, DELIVERY AND EVALUATION

"… I used seminars for 50% of the course in addition to lecturing…. I intend to break the lecture up into 3 elements: lecture, seminar and then hands-on work…. I have found several good PowerPoint presentations that can be used for writing workshops."

The application of the principle of multiplicity in design, delivery and evaluation is evident when teachers carry out the following activities. Please indicate on the table below whether you:

	Almost always	Often	Sometimes	Almost never
• *Alternate activities regularly during classes and consider a format that includes lecture, activity, group work and independent study balanced to maximize student attention and provide varied learning methods*				`
• *Draw curriculum from a variety of sources, presented in a variety of formats and encourage students to seek alternative sources of information*				

	Almost always	Often	Sometimes	Almost never
• *Design, deliver and evaluate in ways that provide multiplicity in:*				
□ *Representation of curriculum content (CAST). Information can be represented in a variety of ways – lecture, audio, visual, electronic, discussion and so on*				
□ *Engagement of learners (CAST). Learners can be engaged in active listening, discussion, self-assessment, cooperative learning and contributing to delivery*				
□ *Evaluation of student learning. Students can be evaluated in terms of tests, assignments, participation, contribution and attendance*				
□ *Demonstration of mastery of content. Students can demonstrate learning verbally, in writing, through presentations, graphically and in a number of other ways*				
□ *Interaction between students and content. Students can be given opportunities to listen to, respond to, evaluate, revise, challenge, debate, convert and so on*				
□ *Ways for students to find meaning in content. Students can be given opportunities to reflect and provide feedback on the meaning and ways to enhance meaning*				
□ *Interaction between students and teachers. Students and teachers can interact through discussion, debate, feedback sessions, individual conversations and more*				
□ *Applications of technology. Technology can be used to deliver information, support information, make information easier to process and understand, exchange information and enhance information.*				

	Almost always	Often	Sometimes	Almost never
• *Use alternate knowledge sources such as other related texts, videos, audiotapes and guest lecturers*				
• *Design, deliver and evaluate in ways that accommodate a wide range of student skill and learning preferences*				
• *Minimize repetitive actions and use redundancy to emphasize essential course content in flexible ways, not merely to repeat course information as initially delivered*				
• *Develop expertise with a range of hardware and software solutions that will enhance your ability to deliver curriculum*				
• *Balance your use of various high and low technology applications to ensure variety for students with different learning preferences*				
• *Are aware of the technology support services in your institution that support teachers and students*				
• *Develop tests and exams that include several forms of questions so that students have a balance of tasks*				

"In the past I never gave too much thought to different methods of presentation or alternate methods . . . this approach has made me reflect and see what I do from my students' perspective."

PRINCIPLE #6
FLEXIBILITY IN USE

"Student feedback so far is positive. Students are more comfortable in the classroom and are more involved in the learning process. Assignments … better reflect their learning comprehension."

The application of the principle of flexibility is evident when teachers carry out the following activities. Please indicate whether you:

	Almost always	Often	Sometimes	Almost never
• *Explicitly communicate, verbally and in print material, a willingness to flexibly respond to the identified learning needs of students*				
• *Have mechanisms in place to determine the flexibility requirements for the class*				`
• *Design content and delivery that is intentionally adapted to students' strengths and pace of learning*				
• *Encourage student feedback on sequence of topics and pace of delivery and movement through the content*				
• *Build in frequent checks for student understanding of information presented and review information that was not clearly understood in alternate formats that might be more easily understood*				

|	Almost always	Often	Sometimes	Almost never
• *Provide options for a variety of ways for students to complete assignments and demonstrate knowledge*				
• *Offer options for student participation*				
• *Provide students with the option of doing assignments in groups and being graded either as a group or on their individual contributions and/or participation*				
• *Alternate the delivery format every 20-30 minutes between lecture, large group discussion, role play, small group activities, self-assessment exercises, video presentations and so on*				
• *Build in options and backup activities so you can shift easily to other activities or teaching methods when required*				
• *Plan alternate activities that allow you to adapt to students' level of knowledge and experiential background*				

"…a Portfolio Assignment will be offered as an alternative to the 15 to 25 page Case Study Assignment which tends to appeal more to the auditory/linguistic/left-brained learner."

GETTING OUT OF THE COMFORT ZONE

The list of behaviours that will support the implementation of the principles of Universal Instructional Design is long. We are also sure that each reader could, on reflection, add to these lists. It would be difficult and demanding to attempt to implement too many of these new behaviours. The idea is to look at three change levels. The diagram on the right indicates these levels. In the centre is the comfort zone, representing the way that we currently teach. It is a collection of the tactics, strategies, methods and techniques that each of us has developed over time and with experience. In the next ring out is a set of instructional methods that are extensions of what we do now, or new activities of low to moderate demand for implementation. In the next ring are second order changes, those that are new to our repertoire or moderate to difficult to implement. Finally, in the outer ring are the real challenges – the development of an entirely new skill or skill set or the introduction of high demand changes. Moving out into the rings in a planful manner is the better way.
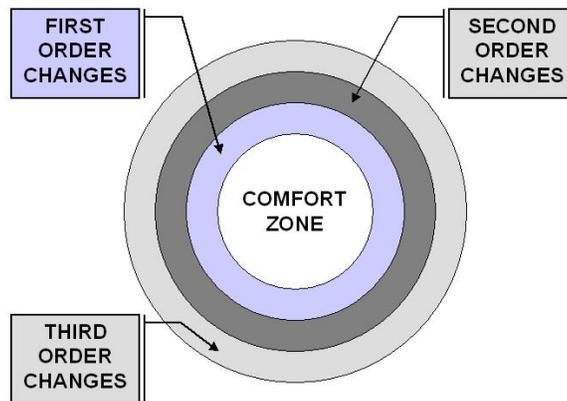
Another way of thinking about this is to examine new teaching methods in relation to the teaching practices that you use now. First order changes would be those that are small steps forward in the way that you teach.

These changes would be minor adjustments that would improve specific teaching behaviours and since they are closely associated with the current methods you use, the challenge would be minimal and the time to develop the new practices short.

Second order changes would be those that are 'in the ballpark' compared to your current practices but those in which change will be significant and time-intensive. One example might be a search for a better text or course pack. These changes are still associated with your current teaching practices but demand a 'stretch' that can be challenging.

Third order changes are those that are significant changes in the way that teachers 'do their business.' An example might be the development of a course website for teachers with little or no web experience. These large changes can require personal retraining, significant time and energy and the support of others with expertise in those particular areas.

The recommendation is that teachers begin with changes that they can successfully implement and then move forward to those that are more challenging. Change is a journey with incremental steps and teachers should program for their own success. Eventually we will arrive at our destination, travelling at a pace that does not overwhelm our resources.

"Everything is going well and we believe the principles we exercise are creating a better learning environment for the students. Their success is beginning to show as a result from these practices."

"We have been investigating the available technological options to be used in the lab component of the course in order to improve the delivery of the content, and the understanding by the students."

"There is difficulty in omitting course material in an introductory course because students need the information for a variety of subsequent upper year courses. We did re-examine our course content to ensure they were consistent with the learning outcomes of each major topic, and so that lectures did not contain too much information for the students to process. We decided to omit some materials that we felt were not essential to subsequent courses, and added more examples and metaphors to each lecture topic to help the students construct additional meaning from the topic."

MAINTENANCE

"Lots of people limit their possibilities by giving up easily. Never tell yourself this is too much for me. It's no use. I can't go on. If you do you're licked, and by your own thinking too. Keep believing and keep on keeping on." Norman Vincent Peale

OVERCOMING OBSTACLES AND DISTRACTIONS

"Some act till they meet obstacles, others act in spite of obstacles and conquer them; but some act not, fearing the possibility of some obstacles that might arise en route." *Chinmayananda*

"Because this course started in September, we are unable to change any content of the course which has already been displayed in the course syllabus. We are, however, working to improve the delivery of the course material in lectures and labs."

Even with the best of planning, obstacles to implementation will and do appear. It has been said that obstacles are 'those fearful things that we see only when we take our eyes off the target,' but that does not mean they do not exist. Once teachers have put into place the Universal Instructional Design methods and techniques that they have decided upon in their initial contemplation and have detailed in their preparation and planning they need to maintain them. That can be a challenge in the busy life of most teachers in postsecondary education. In preparing to manage the obstacles that arise – whether those obstacles are personal, material or systemic – keep the following list of things in mind:

Anticipation. Most obstacles teachers face can be predicted if they have a sense of the systems within which they work, the resources available and their capacity to deal with obstacles. It is important when developing an implementation plan to consider obstacles that may be encountered. Some can be worked around, some can be overcome but there may be some that are so difficult it would be best to avoid them. That is not being a 'chicken' – sometimes it is 'owl' – meaning that it is the wise choice.

Knowledge. Knowledge is power and a thorough understanding of the principles and practices that you intend to implement, supported by a thoughtful plan will help you over the rough spots that occur when you wonder "what do I do now?" It is for that reason that our principles section is set up in the form of a checklist. Using it you can assess your readiness for implementation and can choose techniques you can manage.

Resources. When teachers have arranged for appropriate resources to support them, whether those resources are financial, material or people (mentors, coaches and your colleagues), they can use these resources when the inevitable obstacles eventually present themselves. Part of planning for what they can and cannot do relates to the availability of the resources that are required when they are required.

Flexibility. Open-mindedness and adaptability are essential elements in the change process. Teachers may find that they intend to do one thing but have to do another because of some organizational or bureaucratic limitation. Entering the change process with flexibility in mind will reduce the frustration and resentment that might develop when obstacles cannot be immediately overcome.

Enthusiasm. If you sincerely believe that what you are doing will support the success of students and enhance your sense of satisfaction in the way that you teach, that passion can be a source of energy in responding to obstacles along the way. Some teachers build enthusiasm by doing the 'right thing,' some by doing 'things right' and some by doing both.

Tough-mindedness. There are times when your best ally can be a solid determination not to be rushed – even by yourself. Tough mindedness will be required when you must overcome obstacles, including the initial reaction of students or colleagues to the changes you make and the approach that you take.

> *"I realized how frustrating and time consuming it is to develop Web content. I need to go back to the simple lesson-planning template for each of my classes. This will cause me to take the extra time to actually plan the lesson in its entirety and to evaluate the best way to deliver the content to best suit my learners."*

Sticking to the Plan. Those who have prepared a detailed plan can refer back to it and gauge their progress toward the goals they have established. Establish your own review schedule (at least at the end of each semester) in order to measure your progress toward teaching goals.

RESISTING DISTRACTIONS

"A distraction's only a distraction if you pay attention to it. You can always find a distraction if you're looking for one. Discipline and concentration are a matter of being interested." (Tom Kite)

There is no end to potential distractions for busy teachers at the post secondary level. Some of those distractions are internal (other interests) and some are external (other demands). Some say they can 'resist everything except temptation' and yet it is the resistance to distractions that is necessary to our success. Here are a few things to remember when you find yourself distracted:

Maintain a sense of urgency. Develop a plan that has you moving forward at a pace that is challenging without being overloading. Set your timing so that you have a smooth and continuous flow to your implementation of specific strategies and techniques. Do not rush, but set a pace that will support your goals and keep you moving forward.

Build on momentum. Nothing promotes success like success. If you are able to maintain a sense of purpose and progress you will achieve early the kinds of success that will establish a momentum to carry you through the rest of the semester. Momentum depends on having a plan that allows you to recognize progress and success benchmarks along the way. It may involve the use of a mentor who can watch for, recognize, point out and reinforce these small achievements.

Maintain a positive attitude. Set up a process by which you are forced to remind yourself of your achievements. Do frequent feedback checks with students who can confirm the importance of the techniques you use. Use your mentor to recognize and reinforce progress. Develop your own list of intended accomplishments and check each off as it is met.

Disappointments are not disasters. Things may go wrong from time to time. Others may not adequately praise your efforts - or even recognize all of them. You may try something that backfires. It happens. Remember that there are no such things as failures – just lessons. But the same lesson may be presented to you over and over until you learn it. Focus on your accomplishments and the intention you put into even those activities that do not work (at least not the first time).

Reward yourself. If you do not recognize and celebrate your successes you cannot expect that anyone else will. By having a written work plan with established outcomes, you can recognize your own progress and take steps to reward yourself for the gains you have made.

Remember – persistence, not perfection. Change is a journey to a far off destination, not a trip to the corner convenience store. Implementing Universal Instructional Design techniques is like starting your car from a stoplight. It accelerates slowly at first and then gains speed.

CONSOLIDATION
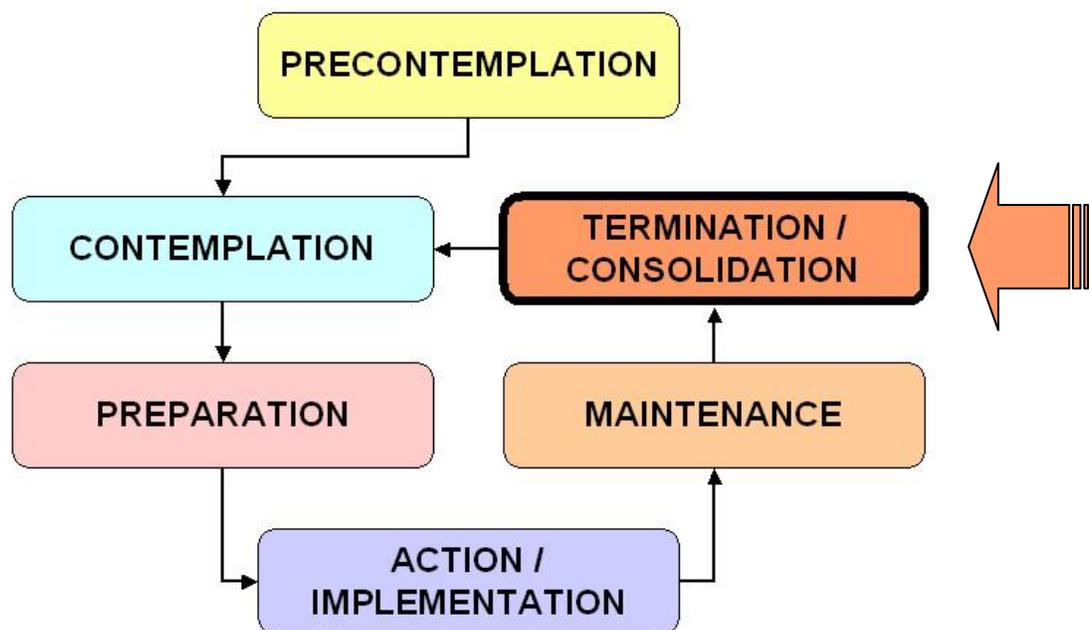
"Nothing splendid has ever been achieved except by those who

dared believe that something inside them was

superior to circumstances." Bruce Barton

PUTTING IT ALL TOGETHER

The stage of consolidation is all about the three R's – review, reflection and revision. Consolidation means 'putting things together' or 'uniting' a set of discrete components. It also means understanding how new learning and new techniques can be integrated and associated with our prior learning and pre-existing teaching methodologies.

THE REVIEW PROCESS

The review process at the end of the semester or course delivery is based on at least three (3) key elements:

1. The **written plan** that teachers make to guide their implementation;
2. The **notes and records** that teachers keep during implementation and delivery of the course; and
3. The **evaluations they have students complete**, or complete with their students, to evaluate their implementation and the particular design, delivery and evaluation components they selected. Most of our postsecondary institutions complete teacher evaluations, at least from time to time. We recommend that teachers wanting to implement strategies guided by Universal Instructional Design principles evaluate every course they teach in terms of those strategies and how well they reflect the underlying principles. Without evaluation from the key players – their students – through checklists and/or focus groups, it is difficult to ensure the continuous process of growth and development that is so important.

QUESTIONS TEACHERS CAN ASK THEMSELVES

- *What changes have I made in course design?*
    - Which changes improved the overall design of the course? In what way?
        - Which did not? Why not?
    - Which changes produced improvement in student learning and academic performance? In what way?
        - Which did not? Why not?
    - Which changes improved student attendance? In what way?
        - Which did not? Why not?
    - Which changes improved the overall 'flow' of the course? In what way?
        - Which did not? Why not?
    - Which changes were the most challenging? In what way?

- *What changes have I made in course delivery?*
    - Which changes improved particular instructional practices? In what way?
        - Which did not? Why not?
    - Which changes improved overall student participation? In what way?
        - Which did not? Why not?
    - Which changes improved student attendance? In what way?
        - Which did not? Why not?
    - Which changes improved content delivery? In what way?
        - Which did not? Why not?

- *What changes have I made in course evaluation?*
    - o Which changes improved the overall quality of student assignments? In what way?
        - ▪ Which did not? Why not?
    - o Which changes improved the particular relevance of assignments? In what way?
        - ▪ Which did not? Why not?
    - o Which changes provided students with choice in how they completed evaluation activities? In what way?
        - ▪ Which did not? Why not?

THE REFLECTION PROCESS

Once you have answered the questions above (and others that you will develop for your own review process) reflect on the answers to those questions and consider the following:

- *What changes have been the most important in improving your ability to delivery accessible curriculum in an inclusive learning environment?*

- *Have these outcomes validated the changes that you have made and the techniques you have put into place?*

- *Did the results that you have seen validate the time and energy that you have put into implementation of new methods?*

- *Did you have adequate resources to support your implementation of best practice to support the Universal Instructional Design principles?*

- *What have you learned about course design that you can incorporate in changes to this course the next time you deliver it?*

- *What have you learned about your delivery preferences and the alternate ways that you can deliver course information?*

- *What have you learned about the relevance of various evaluation strategies for this student population and this curriculum?*

- *What have you learned about yourself and your ability to stretch your teaching skills and build your instructional capacity?*

- *What have you learned about your students through your efforts to establish a design, delivery and evaluation process that improves the accessibility of this course content?*


THE REVISION PROCESS

The process of reflection should point out areas in which achievements have been made and areas in which change is yet to be made.

- **Progress is a balance of effort and outcome**. If you have found the changes you have made valuable in providing accessible content, then you will want to maintain those changes that are most responsible for improvement and which do not place undue demand on you and your resources. Identify those techniques and consider ways to make them a permanent part of your instructional methodology.

- Growth comes in stages and you were asked in the beginning to "**go as far as you can see, and when you get there, you will see farther**." You define what 'farther' means in the sense of making decisions about additional changes. One of the blessings of a trial and

error approach to change (as most are) is that in the process of doing things differently we learn how to do them even more differently as a way of achieving efficiency. Thomas Edison once said that he had not failed thousands of times in inventing the light bulb, he had merely discovered thousands of ways that would not work. The scientists who developed the 'formula 409' cleaning solution took 409 attempts to succeed but in the process learned many ways that would not work. The process is often called 'failing forward' and that term seems to capture the learning inherent in progress through trial and error.

- It is a matter of **P.A.C.E**. First we *plan* how we will accomplish specific goals. Then we *act* to achieve those goals. Next, we *check* how well we have done against specific benchmarks. Finally we *evaluate* our outcomes in order to determine if we have accomplished the intended outcomes. It is a cyclical process of development that repeatedly over time and experience identifies areas for revision and improved planning. Develop a form such as that one the next page to track progress toward your goals.

THE P.A.C.E. WORK PLAN FORMAT

PLAN What do I want to accomplish?	ACT What actions do I have to take?	CHECK When will I measure progress?	EVALUATE How can I evaluate progress?
○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
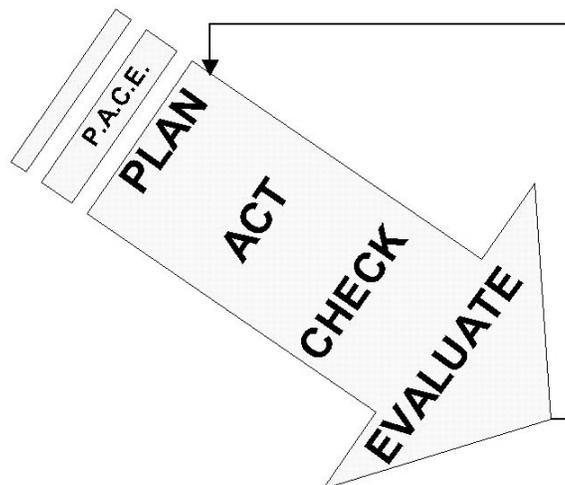
ENDPIECE

"Knowing is not enough; we must apply. Willing is not enough. We must do." (Johann Goethe)

People do not resist change – they resist being changed. An old axiom but true more often than we care to acknowledge. Change is, however, no more that an adaptive response to changing circumstances. Our teaching circumstances are changing. The world of postsecondary education is changing. Our population of students is changing. Their needs and expectations are changing. Technology is changing. We must adapt.

Universal Instructional Design is an approach to instruction that is a convenient basket into which teachers can place classified and organized teaching 'best practices.' It is a label that can foster professional communication. It is a set of design, delivery and evaluation techniques that can enhance student achievement and teacher satisfaction while using flexibility and planning to provide accessible education.

"In terms of learning, universal design means the design of instructional materials and activities that makes the learning goals achievable by individuals with wide differences in their abilities to see, hear, speak, move, read, write, understand English, attend, organize, engage and remember. Universal design for learning is achieved by means of flexible curricular materials and activities that provide alternatives for students differing abilities. These alternatives are built into the instructional design and operating systems of educational materials – they are not added on

after the fact." (*Research Connections, Number 5, Fall 1999*) as quoted in Frank Bowe – Universal Design in Education)

It is not as easy as it may sound. Nothing worthwhile ever is. On the other hand, for many college and university teachers, it is not an overwhelming change from what they do now in terms of philosophy, although for some it may be a significant change in practice.

We have increased student access to postsecondary education in very significant ways. Many students, with and without identified disabilities, who once would not have considered postsecondary education an option, are being successful in achieving diplomas and degrees. To do so, they benefit from exceptional teachers and they rely on student services that support their success. The implementation of Universal Instructional Design principles into postsecondary classes is, at one level, an effort to move some 'student services' practices directly into the classroom where everyone benefits equitably. To do so, we transfer those 'student services' skills to teachers. In combination with their teaching skills, commitment to student success and willingness to make flexibility a key component in their instructional toolbox, they provide a more accessible education.

We have seen that an increase in the thoughtful implementation of Universal Instructional Design principles changes things. However, as we are often reminded:

"Things do not change. We change."

(Henry David Thoreau)

# FREQUENTLY ASKED QUESTIONS
SECTION

FREQUENTLY ASKED QUESTIONS
QUESTIONS RELATED TO DESIGN

DESIGN

DELIVERY

EVALUATION

UID sounds a lot like spoon-feeding. Is it? No. In fact, one of the findings of our recently completed research project, substantiated by other work in this field, is that students clearly state that the approach is not spoon feeding. This mistaken assumption was outlined earlier in the guide under common misunderstandings and students have repeatedly made the point that Universal Instructional Design practices do not make the content easy – it makes it easier to understand, associate, integrate and apply. Students still share in their own academic success – for example, they are responsible for learning material that may not be presented in class. It is not about making content easier, or changing standards of performance, it is about making it easier for students to meet those standards of academic performance in a manner that is most efficient for them.

I understand learning style – isn't that what UID is all about? Learning, learning style and learning disabilities are related but different things. Learning style matters. A comprehensive definition of learning style was adopted by an American task force, comprised of leading theorists in the field and sponsored by the National Association of Secondary School Principals. This group defined "learning styles" as the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment (Keefe, 1979). Included in this
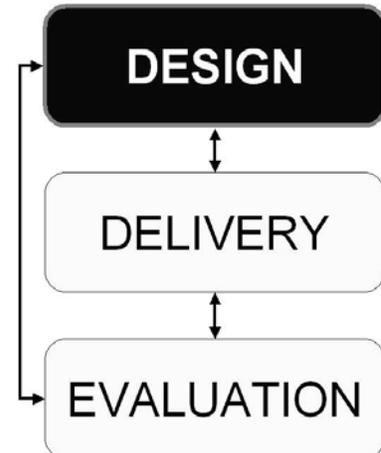
comprehensive definition are "cognitive styles," which are intrinsic information-processing patterns that represent a person's typical mode of perceiving, thinking, remembering and problem solving**.** "According to the noted educator Sandra Rief, http://members.aol.com/susans29/lsa.html students retain 10% of what they read; 20% of what they hear; 30% of what they see; 50% of what they see and hear; 70% of what they say; and 90% of what they say and do. So in spite of everything you'll read about learning styles avoid thinking about them too rigidly." Learning style is also contextual – some circumstances require a different learning style than the one you might prefer.

My text already comes with a CD. Isn't that accessibility? If the CD includes a full electronic copy of the text, then it would meet our standards of best practice. Most often, however, the CD contains supplementary materials, sample tests, exercises and PowerPoint shows – not a full electronic copy of the text. These other resources are useful, and students use them; however, our goal is that the CD holds a full copy of the text compatible with modern screen readers.

I am one of a number of teachers teaching the same course and therefore I can't change any course parameters (text, type of evaluation, resources etc.) We ran into this challenge during our research project and it is a point that others have occasionally brought up. Their solutions are as creative as they are as individuals. Often they find ways to use the text in innovative ways, resequencing the content to support 'nesting' and 'building sequential connections.' They may give emphasis to particular topics that they feel are the essential course

components that produce intended course outcomes and give relatively less emphasis to topics that are tangential and perhaps supportive of association but not as essential. They may even influence other teachers by outlining ways that the text can be used more effectively rather than simply suggesting it be replaced. Some, through these practices, convince others that the text needs to be changed.

I don't have time to do what I have to already – how can I find time to add UID techniques to what I do now? People usually find time to do what they believe is important. Time is a precious commodity. Everyone is busy. The short answer is that it takes a great deal of time initially and less time later to implement these principles.

"Should I be teaching? If this is a part time thing for me and since everything is done on the fly and at the last minute and in the wee hours of the morning, am I being a responsible teacher?"

Time management is no less a challenge for teachers than it is for their students. The tactics to improve time management are also the same as they are for students. First, establish a baseline by completing a time log and determining where time is spent at present. Then examine the priorities with those demands on your time – and not everything can be a priority. Next, find any 'black holes,' the continuous time wasters. Analyze the results of your time log and determine where time can be found, or which other tasks can be moved down the priority list. Finally, determine what you can realistically do – and do that well.

FREQUENTLY ASKED QUESTIONS
QUESTIONS RELATED TO DELIVERY

If I put everything on line, will anyone attend my class? This is actually one of the most common questions that teachers ask. There are students who will find the information on the course website sufficient for their particular needs and may not come to class as often. If that is an issue for you individually, there are a number of tactics that teachers use to ensure that students attend – and these are appropriate in recognition that some of the students who choose not to attend are making decisions that will interfere with their success in the course. Other teachers are comfortable in working with those who choose to attend and allowing others students the right of choice in attendance.

I have heard that too much PowerPoint is being used. Is that true? At times – and students refer to those times as 'death by PowerPoint.' PowerPoint is a powerful and useful tool and is recommended as a technology with great potential. Nor is it necessarily a problem if PowerPoint is a key part of classes – it is just that it should not dominate to the extent that learning is not reinforced in other ways – including group discussion, activities and teachers teaching. If your class is no more than a PowerPoint show that you walk students through, punctuated by occasional comments, then perhaps all students need is the PowerPoint show itself. It is when PowerPoint is used to support best teaching practices that it really benefits both teachers and students.
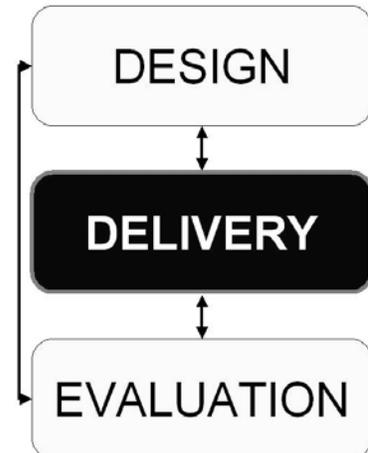
Isn't UID just good teaching? A tough and delicate question. It is, in our view, something more than good teaching. The notion of 'good' is a variable, not a constant. There are many good teachers who do not yet do some of the things that we feel are necessary to implement Universal Instructional Design principles. The collection of ideas and techniques called best practices in Universal Instructional Design teaching are applied in the context of providing accessible content. That is somewhat different that simply 'good teaching.' You can have good teaching practices that do not provide content that is accessible to all learners. You can have good teaching practices that do not incorporate technology. You can have good teaching practices that do not provide multiplicity in participation and demonstration of learning. So in our view, Universal Instructional Design is a broader collection of good teaching practices. Sometimes it is an advantage to give a collection of ideas and techniques a 'label.' People tend to pay attention to things with 'new names.' On the other hand, it can deter those who see 'new' as 'radically different' and 'significant work.' For many teachers, the use of Universal Instructional Design as a kind of 'collection basket' for best teaching practices means enhancing their practice through evolution rather than revolution. The goals, however, are beyond good teaching to good teaching with accessibility as the outcome.

I can't always post things in advance because sometimes I am preparing classes the night before. What do I do? Learn how to manage time so that you can prepare more in advance? Sorry – could not resist. The truth is that many teachers, especially when teaching a course for the first time, are preparing the night before. Here is one suggestion:

"I can't always have everything ready and online two or three days in advance for students – even though that is my goal. My textbook came with a CD that had PowerPoint shows for each chapter. They are not what I would use in class – I revise them, emphasizing what I feel is most important to cover – but since they are provided by the publisher, it is easy for me to post them ahead of time as advance organizers for students."

Using prefabricated materials as advance organizers or previews is one way of handling the time demand and last minute preparation. The other, of course, is preparing several classes in advance.

I hate technology. Is it a must in UID? Yes, technology is a must. It has been put forth as one of the basic components of Universal Instructional Design. Teachers and students have validated its appropriate and effective use time after time. A large number of teachers, if they do not actually hate technology, certainly are not in love with it and often are frightened by it. Our suggestion is, as with most areas of practice, to start small and go slowly. Arrange for appropriate training and support to assist you in using technology well. Almost all postsecondary institutions offer professional development for their teaching staff in the use of technology and an increasing number of institutions are providing their teaching faculty with high quality laptop computers and multimedia classrooms in which to teach. Using technology to support accessibility is becoming much easier.

I can see ways to do this in a small class. How can I do this in a class of two hundred or more students? There is no question that this is a significant challenge – and there are realistic limits to what even the most motivated teacher can do. In our research project, one class was an introduction to Psychology class of 840 students. Our team reported, "despite the fact that the course was very large (approximately 150 - 375 students per lecture), we found that we were able to adopt a majority of the principles of universal instructional design and adult learning into our course. For example, we were able to use WebCT to enhance the learning of our students and the flow of information. They were able to access course material, outlines, learning tools, relevant links, practice quizzes, and up to date grades. In addition, we included links to information on universal instructional design and personal learning styles. We were able to ensure that our course outline clearly identified our learning outcomes, and we modified our course content to include the essential components of an introductory to psychology course (although in an introductory course it is difficult to omit much material as the information are prerequisites for upper year courses). We also found a textbook publisher who gave us a large number of text books in an electronic version. We announced this at the beginning of the course and students who preferred to have this alternate version of the textbook were able to have it for free." Their work was not free from challenges, including having a variety of instructors, creating a physical space to provide a good learning environment, finding alternative ways for students to demonstrate their learning and incorporating cooperative learning. But they did what they could – and the results in a later study showed significantly higher academic performance of this group than that of the previous year before Universal Instructional Design principles were implemented.

FREQUENTLY ASKED QUESTIONS
QUESTIONS RELATED TO EVALUATION

I have been told that students with LD have more trouble with multiple-choice questions than most students, but I used a test bank of multiple-choice questions for evaluation. What do I do about this? This issue needs a lot more study. It has been our experience that students with specific learning disabilities do not seem to have significantly more trouble than other students with <u>well-crafted multiple-choice questions</u>. They do, however, have more trouble than their non learning disabled peers with poorly written, awkward or otherwise 'tricky' multiple-choice questions that many believe have no place in education. There is a larger issue, however, that needs to be addressed. It is our view that the use of textbook provided multiple-choice test banks is incompatible with a Universal Instructional Design approach to teaching. This process, while convenient for teachers, does not meet the principles of equitable use, multiplicity or flexibility and, in the case of poorly crafted questions, would not meet the principle of perceptible information. Fundamentally, it forces students to respond to only one type of question and this is inconsistent with the underlying philosophy of Universal Instructional Design.

What does flexibility and choice mean when it comes to evaluation? As noted earlier in this guide, it can mean many things. It might mean simply that your evaluations include a mix of questions (short answer, multiple choice, fill in the blank, true/false and essay) rather than being
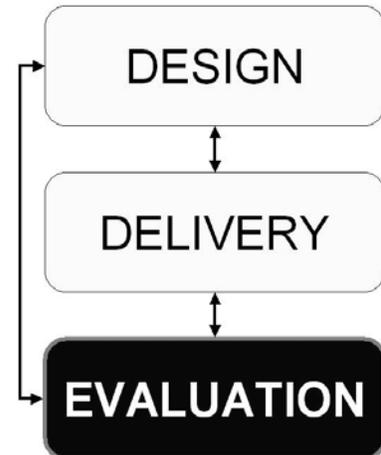
predominantly one or two types. It might mean that students have a choice of which type of question they complete. It certainly means at least clearly communicating a willingness to provide verbal exams where required. It also means thinking differently in some ways about evaluation. Consider this perspective offered by a teacher:

> *"I like to use essay questions because I believe they require students to think. Considering the flexibility mandate in Universal Instructional Design I had to ask myself what 'essay' questions demand. Essay questions ask that students read, understand and associate the information in the question with course content they have been taught. It asks them to consider this information critically, formulate a response, present and explain it to the teacher. Do they have to do this in narrative form, the format we commonly think of in terms of essay questions, or can they answer in bullet form, using a mind map or some other way that affirms their ability to do what essay questions ask them to do? The short answer for me is – of course they can."*

Does this approach take away my control over the evaluation of my courses? Not at all. You control the content of the questions, ensuring that students can respond to questions in a manner that reflects they have learned what is required to meet intended course outcomes. You also determine which types of questions you will use to evaluate certain types of information. You select the standards of performance.

WEB REFERENCES

We have elected to include a list of web references as well as a brief bibliography. These references point you toward those sites that will inform, challenge and encourage your work. We would ask that you send along to us additional sites that you might find worth sharing.

"UNIVERSAL INSTRUCTIONAL DESIGN" SITES:

- Universal Design Principles
- Strehorn - The Application of Universal Instructional Design (UID) to ESL Teaching (I-TESL-J)
- Principles (for assessing students)
- Instructional Design Models
- Universal Design for Learning - CAST- Articles, Publications, Theory & Research
- University of Guelph project being sponsored by the LOTF: http://www.tss.uoguelph.ca/uid/index.html

"ADULT LEARNING" AND "LEARNING STYLE" SITES:

- Principles of Adult Learning
- Evaluating Your Learning Style
- Student Research and Writing Guides
- Advocacy Issues
- Panitz cooperative learning and Wac web page - and much more!
- Network for Cooperative Learning in Higher Education
- DVC Learning Style Survey for College
- Index of Learning Styles (ILS) Questionnaire
- Learning Styles Resource Page
- Learning Styles
- Index of Learning Styles (ILS) Questionnaire #2
- Learning Style Inventory
- Learning to Learn Modules - Learning Styles - Teaching Style Inventory
- Research Based on the Dunn and Dunn Learning Styles Model
- The VARK Questionnaire - General Version
- Learning-Style Inventory
- Atherton, J. Knowles' Andragogy. De Montford University. May 2002. Available online: www.dmu.ac.uk/~jamesa/learning/knowlesa.htm.
- Imel, S. Inclusive Adult Learning Environments. ERIC Digest No. 162. 1995. online: www.ed.gov/databases/ERIC_Digests/ed385779.html
- Lieb, S. Principles of Adult Learning. University of Hawaii. Online: www.hcc.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/adults-2.htm.
- Zemke, R. and S. 30 Things We Know for Sure About Adult Learning. Innovation Abstracts, Vol. VI, No 8. March 4, 1989. Available online:

www.hcc.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/adults-2.htm.

"WEB ACCESSIBILITY" SITES:

- Beyond Accessibility: Treating Users with Disabilities as People (Alertbox Nov. 2001)
- Web Savvy Resources - Top 10 Accessible Web Authoring Practices
- UsableNet - Website Testing Systems
- UniversalUsability.org - Resources, Methods and Evaluation

"BEST PRACTICES IN EDUCATION" SITES

- Best Practices in College Teaching
- A Berkeley Compendium of Suggestions for Teaching with Excellence
- Good Teaching Practices
- Barbara Gross Davis
- Welcome to UNIV1011 - University Success
- CAT Collaborative-Cooperative Learning
- Advisor Checklist - Concordia University Wisconsin
- POWERPOINT Tips
- Implementing Educational Programs (D-690)

CURRICULUM DEVELOPMENT SITES

- Curriculum development document for Sault College:
  http://www.saultc.on.ca/SchoolsDepartments/CDIDFr.htm
- Georgian College curriculum handbook
  http://info.georgianc.on.ca/curriculum/
- Academic Senate for California community colleges –guidelines:
  http://www.curriculum.cc.ca.us/curriculum/goodpract/goodpract_main.htm

USING POWERPOINT SITES

- http://www.roch.edu/faculty/lhalverson/tips3.htm
- http://www.computertips.com/Microsoftoffice/MsPowerPoint/aheader.htm
- https://www.microsoft.com/office/powerpoint/default.asp

- http://www.mwc.edu/training/inte/office/powerpoint/pp_tips.htm
- http://www.west.asu.edu/achristie/powerpoint/
- http://www.bu.edu/celop/mll/tutorials/powerpoint.html
- http://cit.duke.edu/resource-guides/methods-powerpoint-presentations.html

INFORMATION ON DISABILITIES

- The Learning Disabilities Association of Ontario www.ldao.on.ca
- The Learning Disabilities Association of Canada
- Canadian Diabetes Association http://www.diabetes.ca/Section_Main/welcome.asp
- Fibromyalgia Network http://www.fmnetnews.com/
- Canadian National Institute for the Blind http://www.cnib.ca/eng/
- Canadian Hearing Society http://www.chs.ca/
- Ontario March of Dimes http://www.dimes.on.ca/
- National Multiple Sclerosis Society http://www.nmss.org/
- Depression Alliance website (UK) http://www.depressionalliance.org/
- Anxiety Disorders Association http://www.adaa.org/

TRANSTHEORETICAL MODEL OF CHANGE

- http://www.changecompanies.net/transtheoretical_model.htm
- http://www.uri.edu/research/cprc/ttm/detailedoverview.htm
- http://www.uri.edu/research/cprc/publications/risks/transtheoretical_model.htm
- http://www.rce.rutgers.edu/money2000/pdfs/acci01m2k-proceedings.pdf

PREVALENCE OF DISABILITIES

- http://www.ldonline.org/ld_indepth/adult/vogel_howmany.html prevalence of LD in open admission colleges – Susan A. Vogel, Ph.D.
- http://www.smu.edu/alec/ldbiblio.html Barkley and Jacob
- http://www.goaskalice.columbia.edu/0476.html Columbia University – ADHD prevalence 3%
- http://www.eddept.wa.edu.au/saer/policy/supatt.htm#prevalence ADHD 6%

- http://ericec.org/digests/e622.html Up to 6% ADHD
- http://www.usatoday.com/news/health/mental/2002-05-22-college-depression.htm Depression 10-14%
- http://www.bsu.edu/BSU/image/cpsc/media/pdf/yrshort.pdf Anxiety prevalence as high as 30%
- http://www.psc.uc.edu/PWP/Anxiety-InternatnlStudents.ppt Anxiety disorders 10%+

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4. Bowe, F., *Universal Design in Education: Teaching Non-Traditional Students.* London: Bergin and Garvey. 2000.

5. Bridges, W., *Managing Transitions.* Cambridge: Persius Books. 1991.

6. Bryson, J., and Murray, G., *Service Coordination and Case Management in First Nations Communities.* Sudbury: Network North Native Education Training Project. 1998.

7. Bryson, J., Learning Opportunities Task Force Summary Report on 5-site UID Research Project. Barrie. 2003.

8. Ellis, D., *Becoming a Master Student.* Boston: Houghton-Mifflin. 2000.

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10. Harwell, J., *The Complete Learning Disabilities Handbook.* New York: Centre for Applied Research in Education. 1989.

11. Heinich, R, Molenda, M, Russell, J and Smaldino, *Instructional media and technologies for Learning.* Englewood Cliffs: Prentice-Hall. 1996.

12. Kreigel, R., and Brandy, D., *Sacred Cows Make the Best Burgers.* New York: Warner Books. 1996.

13. McShane, Steven L., *Canadian Organizational Behaviour – 4th Edition.* Mc-Graw Hill Press. 2001

14. Prochaska, J., Norcross, J. and Diclemente, C., *Changing for Good.* New York: William Morrow and Company. 1994

15. Renner, Peter, *The Art of Teaching Adults: How to become an exceptional instructor and facilitator*. Vancouver. 1997.

16. Roberts, S., and Jansen, G., *Living with ADD.* California: New Harbinger Press. 1997.

17. Von Oech, R., *A Whack on the Side of the Head.* Connecticut: US Games Systems, Inc. 1990.