Universal Instructional Design

Implementation Guide

Credits

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Foreword

This Universal Instructional Design (UID) Implementation Guide has been written by me (Jaellayna Palmer) while under contract with Teaching Support Services, (TSS), University of Guelph, Guelph, Ontario.

I'd like to acknowledge and offer thanks to the following contributors to this project:

Jaellayna Palmer

A Brief History of
Universal Instructional Design

What is Universal Instructional Design?

The term "Universal Design" originated in the field of architecture, stating that physical spaces and objects that consider the needs of people with disabilities are in fact more accessible and useful for all people. In recent years some educators have suggested that courses designed and delivered with the needs of disabled students in mind are likewise more accessible and effective for all people -- regardless of possible disability, learning style preference, or personal background.

At its core is the principle of inclusiveness and equity. UID suggests that ideally all students should be able to fulfill course requirements without special accommodations (i.e. it avoids segregating or stigmatizing any student). This creates a classroom environment that respects and values diversity.

> Sue is visually impaired and has an assignment to critique a magazine article on reserve in the library. Through her entitlement to individual accommodations, she is provided someone to read her the article or perhaps to transcribe it so that it can be read to her through JAWS. By applying UID principles, the professor might instead do one or more of the following: (1) scan the article as text and link it from the course website, (2) provide an audio clip or (3) allow students to select their own articles for the assignment. The result is that access has been improved for all students, including Joe (home for a few days with a sick child) and Mary (a mature student away on a business trip).

Where the ideal may be "all students", we realize that in the practical world there may be limits to what you or your educational institution can do. We also recognize that some changes will take time, no matter how much you may agree with the desirability of them. Therefore we offer this implementation guide in hopes that you will move closer to the ideal in a manner suitable to your own working environment.

Robin is hearing impaired and attends an economics class in a large lecture hall. The professor asks students to form in-class discussion groups. Robin is marginalized because he cannot discriminate sounds within the auditory chaos. Also marginalized is Terry, in a wheelchair in the back row, and Sherri, a learning-disabled student who works best with time to formulate her ideas. By applying UID principles, the professor might instead suggest questions for consideration in advance of the class, provide an asynchronous electronic forum for student contributions, use class time to debrief and then give students time in class to write a one-minute reflective paper.

Summary of LOTF and UID Project at Guelph

In 2002 the University of Guelph, through Teaching Support Services, received funding from the Provincial Government's Learning Opportunities Task Force[1] to undertake a study of "universal instructional design" (UID) principles.

We began with the central premise of UID, i.e. that when courses are developed and presented in keeping with these principles then the learning of all students (including those with disabilities) is enhanced.

We also began with these questions:

- o Sometimes there are barriers to receiving an education -- can these be reduced?

- o People have a variety of needs and capabilities -- can this be the basis for inclusion rather than exclusion?

- o Diversity is good and desirable -- can this be anticipated and even encouraged?

- o Because it's the right thing to do -- can we systematically apply UID principles into our instructional design?

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[1] Please see http://www.destinationsuccess.org/2001/pages/lotf.htm for more information about the Learning Opportunities Task Force.

Our methodology, intrinsically action-research, entailed these major steps:

- o Articulate UID principles based on principles already established in the physical realm (architecture, city planning, etc.).

- o Select professors and courses willing to use UID principles in making changes to curriculum, materials and delivery. Offer them financial, technical and pedagogical support.

- o Assess the effect on students, professors, teaching assistants and others impacted by these changes.

- o Share successes, results and lessons-learned with the broader community. This has been happening through dozens of presentations and workshops throughout North America and now through this manual.

How This Manual Has Been Designed

We do not claim to have all of the answers, to know your organization's present situation or resources, or to know your own individual role. Therefore, we suggest that you use this "implementation manual" as a guide in assessing your current situation and in making solid, concrete plans following consultation with others.

We are also working from the premise that within your daily interactions with students (whatever your role) you are already modeling many aspects of "good practice". We encourage you to use your own strengths as your starting point.

This guide is written from the perspective of the *"7 Principles of Universal Instructional Design"* as articulated at the University of Guelph. You will find every Principle explored through the following means:

1. A statement of the Principle.

2. A listing of related words or phrases, to enhance conceptual understanding of the Principle.

3. A guiding question coming from the Principle and a suggested interpretation for a yes/no answer to the question.

4. A narrative explanation of the Principle, placing it within the greater context of UID as a larger discipline, and a set of examples suggesting the range of what it might entail.

5. A number of highly concrete examples, modeled from real courses, showing what instructors, teaching assistants and others are doing.

6. A quotation from a student member of our Advisory Group, selected from the many submitted, to capture the heart and spirit of this Principle.

7. A worksheet asking you to pick up pencil or pen and create your own list of changes you'd like to make and what would be necessary for you to accomplish these changes.

Ready to go to Work?

UID Principle #1
Be Accessible and Fair

What does this mean?

Consider the key words through these synonyms and phases:

Accessible

> easily approached or entered
>
> easily obtained
>
> easy to talk to or get along with
>
> safety
>
> sense of security

Fair

> free of favouritism or bias, impartial
>
> just, equitable
>
> in accordance with relative merit or significance
>
> consistent with rules, logic or ethics
>
> user-friendly

To further explore this principle, ask yourself this guiding question:

> Is it likely that students will have difficulties accessing course materials or participating in any essential activities related to this class?

A "yes" answer to this question is a red flag that students are being barred from fair entry to the course itself.

Narrative Explanation

Universal Instructional Design involves anticipating varying student needs and circumstances. Intrinsic to this idea is that students can access the course and find it a fair and safe learning environment.

This principle is so central to addressing student needs that it is sometimes even equated with UID. At its heart is a commitment to remove barriers to accessing (i.e. "obtaining") course materials and taking part in essential activities. You will

probably find that, as you work with other UID principles, this one is often the underpinning of others.

Remedies will vary from digitizing course content to structuring alternative approaches to activities.

Examples

° At least 3 days before each lecture, a professor but an on-line a summary of key points to be covered in the upcoming lecture.

° A seminar leader rotated the starting order for group reports throughout the semester.

° All on-line materials were formatted so that they could be used with screen reading software such as "Jaws".

° A professor included in her syllabus an invitation for all disabled students to meet with her individually to review their specific needs.

And when you think you have it worked out, ask YOUR students:

Did you have difficulties accessing course materials or participating in any essential activities related to this class?

A student told us:

Professors should make the effort to make you feel included, even if it's not always successful.

Worksheet UID Principle -- Be Accessible and Fair

Is it likely that students will have difficulties accessing course materials or participating in any essential activities related to this class?			
Problem areas in my course	What I can do about it	Resources I need in order to fix it	Date by which I will do this

UID Principle #2
Be Straightforward and Consistent

What does this mean?

Consider the key words through these synonyms and phases:

Straightforward

> proceeding in a straight course;
>
> direct not circuitous or evasive;
>
> honest and frank free from ambiguity or pretense;
>
> plain and open
>
> organized
>
> complete
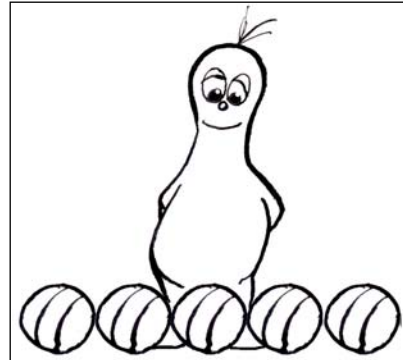
Consistent

> in agreement, compatible
>
> coherent and uniform
>
> reliable, steady
>
> holding true as a group
>
> uniform

To further explore this principle, ask yourself this guiding question:

> Are there major areas of confusion or inconsistency among course objectives, your own expectations and/or how the course is presented?

A "yes" answer to this question is an indicator that students are probably receiving conflicting or ambiguous messages.

Narrative Explanation

Universal Instructional Design involves overcoming confusion, coordinating all parts of the curriculum, and clarifying communications.

This principle itself, perhaps deceptively simple to understand, can be difficult to implement. However, what we know about learning from study skills professionals in general is a tremendous help.

Remedies will vary from detailed proofreading to examining the relationship between learning objectives and the actual curriculum.

Examples

° A professor confirmed that every question on the final related directly to information covered in class or within the written materials.

° All mid-semester changes to the course syllabus were announced in class and also through an electronic forum.

° A TA checked all written materials and PowerPoint slides for consistency, as this guides learning by providing visual and cognitive clues, i.e. predicting meaning and actions.

And when you think you have it worked out, ask your students:

> Are there major areas of confusion or inconsistency among course objectives, your expectations and/or how the course is presented?

A student told us:

I wish that professors would be consistent in the format they require for essays.

Worksheet UID Principle – Be Straightforward and Consistent

Are there major areas of confusion or inconsistency among course objectives, your own expectations and/or how the course is presented?			
Problem areas in my course	What I can do about it	Resources I need in order to fix it	Date by which I will do this

UID Principle #3

Provide Flexibility in Use, Participation and Presentation

What does this mean?

Consider the key words through these synonyms and phases:

Flexible

>   capable of being shaped, bent or drawn out
>
>   withstanding stress without injury
>
>   easily altered or influenced
>
>   adapting or being adapted
>
>   different usage patterns
>
>   enough varied equipment
>
>   innovation
>
>   creativity
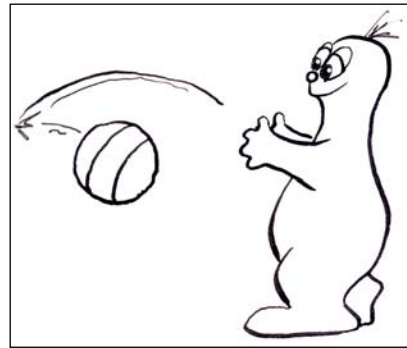
To further explore this principle, ask yourself this guiding question:

>   Does the course offer students enough choices in how it is presented so that they can, to a reasonable extent, approach the course in a way that suits their needs and abilities?

A "no" answer to this question suggests that students are inhibited from demonstrating their strengths in suitable ways.

Narrative Explanation

Universal Instructional Design involves offering options in order to enable physical use, allow fuller participation, and permit suitable demonstration of mastery of course requirements.

This principle, perhaps more than any other, requires imagination. The result, however, can create richer learning for all involved, including students exercising their options, to the benefit of themselves, their classmates and the instructor.

Remedies will vary from alternative formats for reading materials, on-line conferencing in lieu of in-class discussions, and submission of taped (oral) reports.

Examples

° A professor offered students the option to submit a written report or a cassette with an oral report.

° All outside resources were made available in hard copy as well as digital (electronic format).

° Students were given choices in how they participated in group work, i.e. face-to-face or on-line.

° A deaf student delivered an oral report with the assistance of a sign language interpreter.

And when you think you have it worked out, ask your students:

> Does the course offer enough choices in how it is presented so that you could, to a certain extent, approach the course in a way that suited your needs and abilities?

A student told us:

It would be nice if a few classes had a major presentation rather than a final exam.

Worksheet UID Principle – Provide Flexibility in Use, Participation and Presentation

Does the course offer students enough choices in how it is presented so that they can, to a reasonable extent, approach the course in a way that suits their needs and abilities?			
Problem areas in my course	What I can do about it	Resources I need in order to fix it	Date by which I will do this

UID Principle #4
Be Explicitly Presented and Readily Perceived

What does this mean?

Consider the key words through these synonyms and phases:

Explicit

    fully and clearly expressed;

    leaving nothing implied

    forthright and unreserved in expression

    readily observable

Perceived

    directly through the senses, especially sight or hearing

    achieve understanding of, apprehend

    clarity

    accurate

    easy to read and understand

    adaptable to learning styles

To further explore this principle, ask yourself this guiding question:

    Are there barriers to students receiving or understanding the information and resources they need in this course?

A "yes" answer to this question suggests that

(a) the presentation needs to be refined

(b) delivery must anticipate different student capabilities and circumstances

(c) both.

Narrative Explanation

Universal Instructional Design involves maximizing all communication media, without presumption that students are physically or cognitively enabled for all media.

This principle calls for a two-pronged review of course materials, resources and delivery. At first glance, "explicitly presented" seems to imply "readily perceived", but there is a difference. For example, imagine a clearly spoken lecture in a poorly lighted room with a hearing-impaired student in the back row.

Remedies will vary from re-formatting the course syllabus to using amplification equipment.

Examples

°   At least 3 days before each lecture a professor put on-line a summary of key points to be covered in the upcoming lecture.

°   During the first class session a professor demonstrated the course website, highlighting items such as the advantages of various file formats.

°   A course website was created, offering a choice of file formats and including labels which suggested when each format might be advantageous.

°   A TA double-checked that all graphics on the course website had text-based descriptions.

°   A professor in a large lecture hall asked students to help her remember to say out loud key information otherwise presented through visual aides.

And when you think you have it worked out, ask your students:

> Are there barriers to your receiving or understanding the information and resources needed in this course?

A student told us:

If I could have one wish it would be for instructors to use colour coding on websites and sans serif fonts.

Worksheet UID Principle – Be Explicitly Presented and Readily Perceived

| Are there obstacles to students receiving or understanding the information and resources they need in this course?			
Problem areas in my course	What I can do about it	Resources I need in order to fix it	Date by which I will do this

UID Principle #5
Provide a Supportive Learning Environment

What does this mean?

Consider the key words through these synonyms and phases:

Supportive

furnishing support or assistance

bearing weight, especially from below

hold in position so as to keep from falling, sinking
or slipping

keep from weakening or failing, strengthen

provide for or maintain

act in a secondary or subordinate role

available

attitude
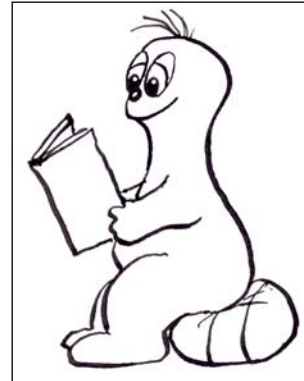
To further explore this principle, ask yourself this guiding question:

Will students feel respected as individuals, welcome to express their
thoughts and able to explore new ideas in this course?

A "no" answer to this question indicates that students are perhaps finding their
physical needs being satisfied more than their intellectual or emotional needs.

Narrative Explanation

Universal Instructional Design is perhaps above all else an inclusive approach to
embrace, welcome and encourage students in their diverse needs.

This principle calls for attitudes and actions that demonstrate respect for students
as adults, contributing to the learning of all. Questions and comments are
encouraged and individual needs are respected. In all likelihood, all instructors
believe this is a worthy goal. Taking specific steps within a course can however
call for subtle adjustments.

Remedies will vary from increasing office hours to setting up on-line listservs.

Examples

° An arts professor encouraged experimentation and made it ok not to succeed at first.

° An instructor gave extra marks to students who re-submitted work that clearly demonstrated improvement due to feedback on earlier versions.

° A course website, featured on-line conferencing and included unstructured, non-moderated areas for spontaneous postings by students.

° A professor encouraged students to sit next to different students in each lecture and then devoted 3 minutes of every class period for them to get to know each other better on a first-name basis.

° During the first class meeting, both the professor and the TAs introduced themselves. They also linked their own websites from the course website.

° A TA encouraged more experienced students to share their knowledge with other students in an attempt to create a more collaborative atmosphere.

And when you think you have it worked out, ask your students:

> Do you feel respected as persons, welcome to express your thoughts and able to explore new ideas in this course?

A student told us:

Instructors should try to satisfy all learning styles and teach in different formats.

Worksheet UID Principle -- Supportive Learning Environment

Will students feel respected as individuals, welcome to express their thoughts and able to explore new ideas in this course?			
Problem areas in my course	What I can do about it	Resources I need in order to fix it	Date by which I will do this

UID Principle #6
Minimize Unnecessary Physical Effort or Requirements

What does this mean?

Consider the key words through these synonyms and phases:

Unnecessary

> needless

Effort

> use of mental or physical energy to do something, exertion

> difficult exertion of strength or will

> something done or produced through exertion, an achievement

> force applied against inertia

> organized for maximum efficiency

To further explore this principle, ask yourself this guiding question:

> If there are physical challenges or obstacles to participating in this course, can they be reduced or avoided?

A "yes" answer to this question is a red flag that students are distracted by physical challenges. In many respects this principle works hand-in-hand with principle #1, Accessible and Fair.

Narrative Explanation

Universal Instructional Design recognizes that students will be of a wide range of ages, backgrounds, physical characteristics and personal circumstances.

This principle calls for considering the physical effort required to complete the course and systematically eliminating -- or at least adjusting -- anything that is unnecessary. The learning should be about the *material* not the physical place called "class".

Remedies will vary from forming teams for collecting data to simplifying navigation on the course website.

Examples

° Navigation aids were added to a course website in order to reduce the amount of vertical scrolling.

° In a physiology lab requiring physical exertion to get vital signs data, students were grouped; as a result, only one member of each group needed to volunteer to do the physical activity.

° Before opening on-line conferencing on a course website, a professor gave every student a summary of netiquette, including a reminder to put new information at the top of a forwarded message, so that students using Jaws would not have to re-listen to old information before getting to the new information.

And when you think you have it worked out, ask your students:

> While you participated in this course, are there physical challenges or obstacles that could be avoided?

A student told us:

Sometimes there isn't enough space in seminars for students to feel comfortable.

Worksheet UID Principle -- Minimize Unnecessary Physical Effort or Requirements

| If there are physical challenges or obstacles to participating in this course, can they be reduced or avoided?			
Problem areas in my course	What I can do about it	Resources I need in order to fix it	Date by which I will do this

UID Principle #7
Ensure a Learning Space that Accommodates Both Students and Instructional Methods

What does this mean?

Consider the key words through these synonyms and phases:

Accommodates

    provides for, supplies with

    holds comfortably without crowding

    makes suitable

    adapts

    allows for

    considers

    settles

    reconciles
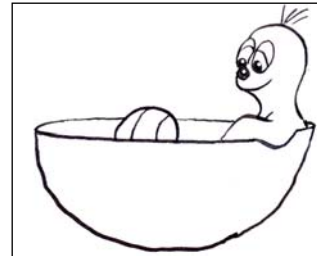
To further explore this principle, ask yourself this guiding question:

    Is it likely that students will find any of the materials or activities in this course to be inappropriate or unsuitable?

A "yes" answer to this question implies that students are experiencing discomfort that distracts them from learning. Working with principle #3 (flexibility), you may need to seek alternatives (a) more suitable for the physical space you find yourself teaching in or (b) more appropriate considering students' personal or cultural sensitivities.

Narrative Explanation

Universal Instructional Design recognizes that learning happens in intellectual as well as physical space.

This principle calls for reviewing the entire student experience from the standpoint of appropriateness, suitability, and psychological accord, avoiding discord. This will mean that, if you do not have the classroom you want, you will need to structure activities for the classroom that you do have.

Remedies will vary from facilitating more out-of-class activities to initiating a request for a different classroom in the future.

Examples

° A professor adapted her plans for the semester when she learned that she would be lecturing in a large lecture hall rather than her customary seminar room.

° Small group activities were scheduled outside of lecture hours, since the classroom was not commodious to chatter and physical movement.

° A lecturer, unaccustomed to lecturing in a large auditorium, asked someone from the drama department to give her some presentation tips.

And when you think you have it worked out, ask your students:

Are there any materials or activities in this course that you found to be inappropriate or unsuitable?

A student told us:

Large classes make asking questions difficult.

Worksheet UID Principle – Ensure a Learning Space that Accommodates Both Students and Instructional Methods

Is it likely that students will find any of the materials or activities in this to be inappropriate or unsuitable?			
Problem areas in my course	What I can do about it	Resources I need in order to fix it	Date by which I will do this

Other Resources

Practical guides to the following subjects may be found at http://www.tss.uoguelph.ca/uid

Teaching Assistants

Creating Course Outlines

Lecture Guides

Assigned Readings

Creating Websites

Grading and Assessment

Lab Work

Physical Space

Creating a Syllabus

Visual Aides

Institutional Supports

Learning Disabilities and E-Learning