

Measured Outcomes of the Universal Instructional Design Project

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Overview

In order to evaluate the effectiveness of the Universal Instructional design (UID) Project, three surveys have been administered to those students who were enrolled in courses funded by the project.

1. The UID scale is a 30-item questionnaire designed specifically for this project.
2. The Academic Self-Efficacy Questionnaire (ASEQ; Wood & Locke, 1987), which measures the student's level of self-confidence in 8 areas.
3. The Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988) assess the positive and negative emotions felt while in the classroom.

Data using these three measures was collected in November 2002 (Time 1), and March 2003 (Time 2). At both times, courses were classified as "interim" in their redesign or enhancement, although courses at Time 2 were more developed than at Time 1. One hundred and nineteen students filled out the surveys at Time 1; seventy-seven did so at Time 2.

The UID Scale

- Analysis of the entire UID scale showed that there was significantly greater implementation of UID activities in courses at Time 2 than at Time 1.

Time 1 and Time 2 data were also compared in order to assess whether students reported any significant differences in the implementation of specific UID activities. Compared to Time 1, the data revealed that there was greater UID implementation at Time 2 on the following items of the UID scale:

- Course materials are provided in alternative formats (for example, on disk, on a web site, etc.) **21% higher**
- Useful on-line supports and resources are provided by the professor **15% higher**
- The learning environment (e.g., classroom, lab, etc.) is physically accommodating **24% higher**
- The class offers a safe, non-threatening learning environment **11% higher**
- New material is presented at a comfortable pace **24% higher**
- New material is presented in more than one way **17% higher**
- Students feel free to pose questions or give opinions during class **18% higher**

- The professor emphasizes the most important topics during the lecture so students know what to focus on in the textbook and other assigned readings **23% higher**
- Essential reading material is also available in digital format or on-line **24% higher**
- The professor is approachable and accessible **25% higher**
- The professor encourages a classroom environment that shows tolerance for others **22% higher**
- The professor accurately describes what material will be covered on tests and exams **18% higher**
- Technical terms and other difficult words are presented in more than one way (i.e., blackboard, presented on overheads, emphasized through written materials and/or the course website) **19% higher**
- Difficult ideas and concepts are presented with enough elaboration and examples **24% higher**
- The professor verbalizes everything that is written on the blackboard or presented on an overhead **11% higher**
- The professor speaks while facing the blackboard or looking down at an overhead **33% lower**
- The professor's expectations are consistent with the course syllabus **14% higher**
- All students have access to all parts of the curriculum (i.e., textbooks, web sites, lab equipment, other materials, assigned readings, etc.) **14% higher**
- The professor respects the diversity of students in the class **21% higher**
- Feedback on tests and exams provides an opportunity for further learning. **19% higher**
- Essential information is presented both verbally and visually. **10% higher**
- Students feel that the professor is open to viewpoints other than his/her own. **25% higher**
- Course materials reflect a diversity of viewpoints and opinions toward the course topic. **15% higher**
- Tests and exams being consistent with what is emphasized in class **16% higher**

Academic Self-Efficacy Questionnaire

Time 1 and Time 2 data from the Academic Self-efficacy Questionnaire were compared in order to assess whether there were any significant differences on the eight specific academic self-efficacy components. Compared with Time 1, all 8 areas were significantly higher at Time 2:

1. Class concentration **14% higher**

The proportion of class periods for which students felt they were able to concentrate and stay fully focused on the materials being presented

2. Memorization **19% higher**

The proportion of facts and concepts covered in the course that students felt they were able to memorize and recall on demand (e.g. exam time, in response to questions)

3. Exam concentration **14% higher**

The proportion of time during exams for which students felt they were able to focus exclusively on understanding and answering questions and avoid breaks in concentration

4. Understanding **19% higher**

The proportion of facts, concepts and arguments covered in the course that students felt they understood as they were presented in lectures, tutorials or course materials (e.g. textbooks, assigned articles)

5. Explaining Concepts **22% higher**

The proportion of facts, concepts and arguments covered in the course (e.g., in lectures, tutorials or course materials) that students felt they were able to fully explain clearly to others in their own words

6. Discriminating Between Concepts **21% higher**

The degree to which students felt they were able to discriminate between the more important and less important facts, concepts and arguments covered in the course (i.e., in lectures, tutorials and course materials)

7. Note-taking **20% higher**

The proportion of the time that students felt they were able to make understandable course notes which emphasize, clarify and relate key facts, concepts and arguments as they are presented in lectures, tutorials or course materials

8. Grades **21% higher**

The degree to which students felt they have the necessary skills to get various grades in their course, assuming that they tried

Scores on the UID scale were also correlated with the global score on the Academic Self-Efficacy Questionnaire both at Time 1 and at Time 2.

- There was no significant relationship between UID principles and academic self-efficacy before the courses were re-designed (i.e., at Time 1).
- At Time 2, however, the more that UID principles had been incorporated into the courses, the higher students' academic self-efficacy.

Positive and Negative Emotions

Time 1 and Time 2 data on the PANAS were compared in order to assess whether there were any significant differences in the emotions felt by students while in the classroom. Compared to Time 1, at Time 2 students reported the following emotions:

- Alertness **14% higher**
- Excitement **14% higher**

- Feeling inspired **12% higher**
- Determination **10% higher**
- Enthusiasm **16% higher**
- Strength **12% higher**
- Attentiveness **10% higher**
- Feeling active **14% higher**
- Pride **16% higher**
- Irritability **10% lower**

The UID scale scores were also correlated with the positive and negative emotion scores of the PANAS at Time 1 and Time 2.

- At both Time 1 and Time 2, the more UID principles had been incorporated into the courses, the more students reported feeling positive emotions.
- At Time 1, there was no association between the degree to which UID principles were incorporated into the courses and the degree of negative emotions reported by the students.
- At Time 2, higher levels of UID implementations were significantly correlated with lower levels of negative emotions.