Illinois State University

University Assessment Office Newsletter

Test Scoring News **October, 1997**

Item statistics that are used to improve the quality of classroom tests have remained the same for many years, but methods of producing and delivering results have changed dramatically. We are in the process of making changes in our system and are hereby inviting you to let us know what you want!

We have investigated the possibility of a totally self-contained PC-based operation. However, the volume of work that we handle and financial considerations resulted in the decision to use both mainframe and PC capabilities. We are presently providing choices of hard copy or test results on disk, as well as a wide variety of options for test statistics and student feedback. Very soon laser-printed, instead of green-bar, output will be available. There has been a request for a new delivery method, on-line transmission of results from our PC to yours. Is anyone else out there interested in this option? We are also examining test packages such as LXR that provide capabilities for item banking, criteria-based test building, interactive testing, and other features common to PC users, in addition to the standard output which we currently provide. The new capabilities are frequently labor-intensive up front for faculty, but can provide benefits, especially for large classes and multi-section courses. We know about the labor involved because we created an item bank for Constitution testing in the mid 80's - without the ease of the current packages.

Let us know what you want in terms of statistics, format, and delivery of results. We want to hear your comments and suggestions! If interest and demand warrant it, we will continue to pursue these possibilities.

Contents

Were You Aware of This Gender Gap ?

Student responses to the freshman survey also revealed discrepancies in self-perceptions between males and females. These statistics represent percentages of students who rated themselves as "above average" on the following dimensions:

	Males	Females
Academic Ability*	65%	53%
Math Ability	43%	28%
Competitiveness	73%	45%
Emotional Health	58%	47%
Cooperativeness	68%	73%
Writing Ability	43%	43%
Intellectual Self-Confidence	64%	46%

*for 1996; GPA (males) = 2.18, GPA (females) = 2.38

Freshman Survey Results

For the past three years, UAO has administered the CIRP survey to incoming freshmen (see Assessment Outcomes p. 3). As a result of this project, we have learned a great deal about the realities and perceptions of incoming freshmen. For example:

Did you know that...

- As high school seniors, 41% spent two hours or less per week studying or doing homework and 54% spent less than one hour per week reading for pleasure.
- 26% of the males and 16% of the females agreed with the statement "the activities of married women are best confined to the home and family."
- 50% of Caucasian students and 30% of minority students agreed with the statement "affirmative action in college admission programs should be abolished."
- The reasons most frequently cited by students as "very important" in influencing their decision to attend ISU were "graduates get good jobs" (39%) and "good academic reputation" (36%).

University Assessment Office

115 Julian Hall Phone: 438-2135

Office Hours: Mon.- Fri. 8:00-4:30

Interpreting and Using Test Scoring Output

The purpose of including statistical output with test results is to provide our users with the information they need to improve the quality of their tests. If there is sufficient interest, we will schedule group sessions to explain the statistics that are given on test scoring printouts. We will also demonstrate how this information can be used to modify tests so that they provide a more accurate assessment of student learning and enhance fairness in the grading process. If you are interested in attending such a presentation, please contact the Assessment Office at 438-2135.

Tips for Using Item Analysis

Regarding the Present Test. If examination of the item analysis results indicate one or more seriously flawed items, you may want to modify the test scores, either by rescoring the entire group with a new key or by adjusting the scores of students affected by the faulty item(s).

Regarding the Instruction. Items with high difficulty indices, if they have no apparent defects, may indicate that the material was not adequately covered in the instruction. A review or a different approach to the topic may be indicated. Similarly, the most popular answer to a negatively discriminating item may point to a misunderstanding shared by many students or a mistake in the key.

Regarding Future Tests. The primary application of item analysis is to improve future tests by identifying items that are not performing as expected so that they can be improved.

- An extremely easy item may identify a topic that all students have learned; alternatively, the item may have no plausible distractors.
- Difficult or negatively discriminating items may be confusing or ambiguous, or may have more than one reasonably correct answer given.
- Incorrect answers that are rarely chosen should be examined to see if they contain irrelevant clues. If no more than 5 percent of students, over time, select a given response, that response is contributing little to the validity of the item.

Item data are influenced by chance errors, the nature of the group tested, the number of students tested, and the instruction the class has received. The other items in the test are also important: if most of the items in the test relate to a certain content area, a small number of items related to different content are likely to have lower discrimination indices. Whether or not an item measures an important instructional objective is a more important consideration than the magnitude of the difficulty and validity indices. One should not be too hasty in discarding items with poor statistics from a single administration. If an item discriminates positively, is clear and unambiguous, is free from technical defects, and measures an important instructional objective, it may be retained for another try in the future.

Keep in mind that the item analysis applications described above apply to tests whose objective is to provide maximum discrimination among all students taking the test. Different test characteristics are required if the objective is to determine whether all students have achieved mastery of certain material. (Excerpted from www.ucs.umn.edu/uccsweww/oms.html with permission).

It's Here to Stay - Computerized Testing!

Over the past several years there has been dramatic growth in replacing traditional paper-and-pencil testing with computerized versions. Educational Testing Service, the largest testing company in the world, has already converted all GMAT and much of GRE and PPST. Their goal is to be completely computerized by the year 2000, less than three years away. We are already witnessing a decline in the number of tests we administer for external programs.

Here at Illinois State University, we have been administering COMPASS, a computer-based mathematics placement test, to incoming freshmen during Preview. Computer labs at Milner Library and Williams Hall have been used because they have less student traffic during the summer months and can accommodate large groups of students. So far, we have been testing large groups in the traditional fashion, but hope to move to modified on-demand testing in Julian 114 when a twelve station lab becomes available early next year.

The advantages of computerized testing are legion:

1. Students have the convenience of fitting testing requirements into their personal schedules.
2. Adaptive testing, as opposed to linear testing, saves time by routing students through items of varying difficulty until their individual achievement level is reached.
3. Score results are immediately available to students, eliminating the usual two to eight week wait for test results.
4. Enhanced graphics are possible, allowing test constructors to be more creative.
5. Item banking techniques are utilized to produce high quality, multi-form tests.

However, there are also some disadvantages:

1. The acquisition of requisite equipment has not caught up with technological advances.
2. New and very different security problems must be considered and resolved.

Assessment of Student Outcomes

Since 1994, in conjunction with the Office of undergraduate Instruction, UAO has undertaken projects which are designed to evaluate the experiences of freshmen and deliver the findings to faculty and other policy-makers at the university. Although clearly within the scope of the previous Measurement and Evaluation Office, this work has added a different dimension to our traditional responsibilities of test scoring, student testing, faculty course evaluation, and instructional research initiatives. Following is a brief description of our four major projects.

Learning Communities

On a relatively small scale in 1994-1995, we supported research to assess the efficacy of a new project which created learning communities for incoming freshmen. We have continued the research each year and now have data from 1994 through the 1997 freshman cohort, comparing persistence rates, academic success, and other relevant variables between learning community students and the rest of the freshman class. The earliest studies found small, non-significant, differences between the two groups on persistence, and grade point averages; the latest study showed larger, statistically significant differences on those variables, even controlling for ACT scores. It seems reasonable to conclude that experience over the three year period resulted in continuous improvement of the program.

Our latest study investigated the possibility that students who self-select into learning communities already possess the characteristics that we associate with academic success. We found some support for this hypothesis. However, when we controlled for ACT scores, parents' education, family income, and high school grades, statistically significant differences were still found for GPA and persistence.

Last spring, Illinois State University was chosen as one of 21 schools in the nation to participate in a Fund for Improvement of Postsecondary Education (FIPSE) project originating at Evergreen State University in Olympia, Washington. The purpose of the project is to encourage the sharing of problems, solutions and ideas concerning Learning Communities among the selected schools. At the end of the three year project a national conference will be held to showcase the results of the three year program.

Foundations of Inquiry

As a result of years of study and planning, Illinois State University introduced a new general education program which was in the pilot-project stage during the fall semester, 1996. A course entitled Foundations of Inquiry (FOI), an Inner Core interdisciplinary course, was created to "initiate the student's systematic investigation of the nature of knowing, its methods and purposes, and its realizations in differing disciplinary and cultural contexts. It offers a basic orientation to intellectual inquiry, articulating a foundation of academic skills, knowledge, and attitudes to be built upon throughout the baccalaureate curriculum," according to the committee report which described the newly designed general education sequence.

In order to provide an initial assessment of the impact of the FOI course and to inform future course planning, three assessment initiatives were undertaken: focus group interviews, written essays, and student ratings of courses. The focus group project required organizing randomly selected groups of students who had taken Foundations of Inquiry during the fall semester and those who had not. The video-taped sessions were designed to elicit student perceptions of what they had learned and identify problems they encountered during the first semester in the targeted course. The second project used blind-graded student essays which presented arguments for and against stricter divorce laws, to assess a student's ability to both analyze a presented argument and support his or her own position. A total of 79 students participated in these two projects. Student ratings of the course and instruction were compared to ratings of other introductory courses on campus and inter-item relationships were assessed. The evaluation surveys were completed by 453 students in the 23 sections.

For one essay question, "What hidden assumptions are crucial to the argument?", differences in ratings were statistically significant, favoring students who had taken FOI. Video-taped focus group sessions and results of the course evaluation strongly suggested that students were having positive academic experiences that they had not previously encountered.

Freshman Survey: Cooperative Institutional Research Program (CIRP)

The UAO has administered an extensive questionnaire (CIRP) to incoming freshmen for the past three years during Preview. It is a survey which was developed by the Higher Education Research Institute (HERI) under the direction of Alexander Astin. Hundreds of institutions of higher education participate in this project, providing norms that are used throughout the country. With the students' consent, data from student files is merged with information from the survey for research purposes. This process allows us to learn a great deal about Illinois State University's incoming freshmen and also provides information about how the responses of our students compare to those of students at other institutions.

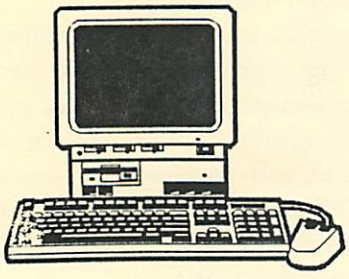
Many aspects of high school senior year experiences, activities, values, attitudes, beliefs, and self-perceptions are tapped in this survey. Combining CIRP data with our student files, which contain demographic information, test scores, grades, and persistence indicators, provides us with valuable information that is used in program planning (see "Did You Know?" on page 1).

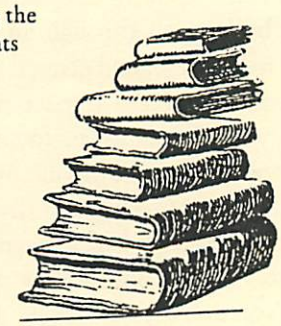
Sophomore Survey

This year we have undertaken the most comprehensive research task to date. We distributed surveys to second-year students, both returning and non-returning. Through merging the pre-freshman with the pre-sophomore survey data, we are able to evaluate what happens to students during the course of the freshman year. Items common to both surveys provide a means to assess change in academic endeavors, behaviors, attitudes, values, goals, and expectations. Questions were also asked about freshman satisfaction with many aspects of the first year experience. Grade point averages and persistence indicators added to the files provide the opportunity to examine factors associated with success in the first year at Illinois State University. First results will be available sometime in November when a presentation will be made at a Students in Transition conference in Chicago. However, this project will keep us busy all year. (See "The Test" on page 6).

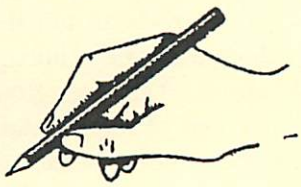
80% of ISU students are pleased with their "freshman year experience"

Computer skills improve during the freshman year for 82% of students





85% of freshmen perceive improvement in their writing skills



41% of h.s. seniors study less than 2 hours per week

9% of ISU freshmen study less than 2 hours per week

Usage Increased By Academic Progress Alert

The UAO experienced a significant increase in traffic for test scoring during the weeks preceding the deadline for APA grades. The difference was great enough to motivate a tally to determine if the perception reflected reality. Here are the results for classroom testing:

Number of forms processed: 50,906
Increase from 1996: 23.4%

Number of tests processed: 671
Increase from 1996: 26.6%

These results do not reflect special runs dealing with attendance.

Obviously, this new initiative to help freshmen assess their progress early resulted in more testing during the first part of the semester compared to previous years.

UAO Web Site Under Construction

In the near future the UAO will be on-line. Riley Sheehen, an Illinois State University junior with a double major in Business Information Systems and ACS, is creating a UAO web site which is scheduled to be completed by December 1. Items that will be included in the site are:

- Information for faculty about using the test scoring service and the options available.
- A brief explanation of item analysis output.
- Calendars and schedules for internal testing programs (Constitution, COMPASS, ACT residual, CLEP, Miller Analogy) and external testing programs (GRE, TOEFL, ACT, PPST, LSAT). Instructions for scheduling correspondence tests are also included.
- Links to other testing sites, such as Educational Testing Service (ETS) which will allow students to get information about the GRE, GMAT, PPST, and other national, standardized tests.
- Summaries of results from assessment projects.
- Instructions for preparing end-of-semester Faculty/Course evaluation forms for processing.
- Announcements.

Faculty and Course Evaluation

In the past, this office has offered presentations on issues concerning the faculty and course evaluation process, addressing such issues as validity, reliability of instruments, appropriate and inappropriate items, and research summaries. For the past year, the Center for Advancement of Teaching (CAT) has been presenting seminars on these topics. However, advice about item construction, requests for specialized output, and questions about submitting forms for processing should still be directed to this office, by calling for a consultation appointment.

Electronic Transmission of Test Scoring Results

An Applied Computer Science major, Li Yi, has chosen to work with the UAO for his department-required final project. The project will allow us to transmit scoring results directly to faculty PC's. Users will be able to request an ASCI file for further processing and/or the summarized results presently provided in hard copy. We look forward to the completion of the project by April, 1998.

Summary of UAO Services

- Provide optical scanning capabilities for scoring multiple choice tests, evaluation instruments, surveys, and research.
- Provide statistical analyses of classroom tests and summarized information for other applications including faculty and course evaluations.
- Provide consulting services for constructing survey and evaluation instruments and interpreting statistical results.
- Provide guidance to individuals or groups who wish to design optical scanning forms for specialized purposes.
- Administer internal and external testing programs, such as math placement (COMPASS), ACT, GRE, Constitution, PPST, certification and correspondence tests.
- Carry out projects which assess student outcomes in conjunction with the Undergraduate Studies Office.

The Test

As a result of this year's Sophomore Survey, we have gathered information about student experiences during the freshman year. Do you think you're in sync with Illinois State University's freshman? We invite you to take this test.

At the end of the freshman year, what percent of students...

_____ 1. Have never used the library?

_____ 2. Studied less than two hours per week?

_____ 3. Were frequently bored in class?

_____ 4. View themselves as above average in drive to achieve?

_____ 5. Asked a teacher for advice?

_____ 6. Perceive that instructors are prejudiced against females?

_____ Against males?

_____ Against students who are members of a racial minority?

_____ Against students who are gay or lesbian?

_____ 10. Have major concerns about financing their education?

_____ 11. Were frequently lonely or homesick?

_____ 12. Are really satisfied with their freshman year experience?

_____ 13. Officially changed their major during the freshman year?

_____ 14. Chose their present major by the age of 15?

_____ 15. Joined a fraternity or sorority?

_____ 16. Agree that there is little an individual to do to change society?

_____ 17. Would agree that it is okay for two people to have sex as long as they like each other?

The answers to these questions and many more will be available in January in a report entitled The Freshman Year Experience at Illinois State University. If you are really curious, we'll have the answers before the report is available.

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