

**Indiana University
Purdue University
Indianapolis**



**Testing Center Annual Report
1999**

Measurement and Evaluation Services for Students, Faculty, Administrators, and Researchers

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Section I: Introduction and Executive Summary

Organization, Mission, Vision, Values, and Goals

The Testing Center is a component of the Office of the Vice Chancellor for Planning and Institutional Improvement (PAII). The mission of PAII is to integrate the functions of institutional planning, implementation, and evaluation in ways that will continuously improve IUPUI. Figure 1 below shows the organizational structure and mission areas of the Testing Center.

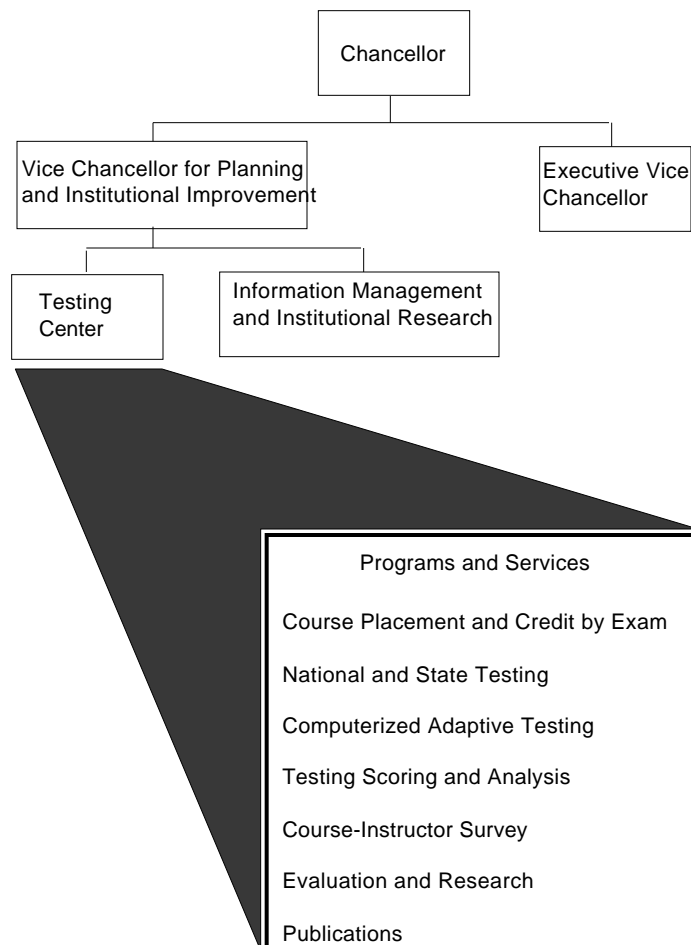


Figure 1. Organization and Mission Areas of the Testing Center

The Testing Center's mission is to provide assessment and evaluation support through the collection and processing of test data, creation of assessment instruments, and the lending of measurement expertise to constituencies throughout the campus community. Our vision is to provide integrated assessment and evaluation information in ways that will continuously improve IUPUI.

All Testing Center activities incorporate the following values:

- Work meets the needs of the sponsoring academic unit or individual.
- Results are thoroughly analyzed and explained.
- Work is timely, accurate, and reliable.
- Information is readily available to those who need it, secure from those who do not.

Our staff is committed to the following work ideals:

- Professionalism
- Responsiveness
- Thoroughness
- Accessibility
- Friendliness
- Sensitivity to data confidentiality issues

The IUPUI Testing Center's goals are manifested through its seven programs which are aligned with the Testing Center's operational objectives, the goals of the Division of Planning and Institutional Improvement, and the aspirations and goals of IUPUI (see bold letters

and numerals for links with IUPUI aspirations and goals. The Center's goals include:

1. Working with academic units to facilitate initial student assessment for appropriate course placements and credits by examination.

2. Providing a service and location where students can take independent studies exams as well as state and nationally-administered tests.

3. Developing state-of-the-art assessment technology in support of tracking student achievement.

4. Providing imaging and optical scanning to improve assessment practices on campus and facilitate the work of enrollment management units.

5. Providing course instructor surveys to assess student perceptions of faculty instruction.

6. Providing general consultation on testing and assessment in support of improvement efforts and faculty generated research.

7. Disseminating the results of applied research conducted at the Testing Center.

We continually strive to make each program more complete, up-to-date, and responsive to the diverse needs of the University community.

Testing Center Advisory Committee & Placement Testing Advisory Committee

The governance structure of the Testing Center was slightly modified this past year, reflecting a desire on the part of the Dean of the Faculties to more strongly represent the needs and wishes of those units who administer placement tests. In the fall of 1999, a Placement

Testing Advisory Committee (PTAC) was established to complement the activities of the Testing Center Advisory Committee. The PTAC is chaired by Dean Scott Evenbeck (University College) with representatives from English (Susanmarie Harrington), Chemistry (David Malik), Math (Jeff Watt), foreign languages (Robert Sutton), University College (Barbara Jackson & Ted Mullen), and the Enrollment Center (Jennifer Pease). The PTAC is designed to make recommendations for the campus regarding activities related to placement testing, and reports directly to the Dean of the Faculties. It met once during 1999.

The Testing Center Advisory Committee consisted of representatives from the departments of English (Dr. Susanmarie Harrington), Mathematics (Dr. Jeffrey Watt), the School of Education & University College (Ms. Mary Wolting), the Enrollment Center (Ms. Jennifer Pease), and University College (Dr. Barbara Metzner). Its purpose is to help guide Testing Center policies and procedures, and to act as a vehicle for disseminating information throughout the IUPUI campus. The committee formally met once during 1999, but subsets of it met more informally to discuss issues related to placement testing. For example, during the fall semester the math representative met with several members of his department as they debated the merits of moving to a math placement test.

Overview

The activities of the past year were built on the foundation of previous development and research. Based on the comments of both high school and college instructors, we were able to expand the grading capabilities of Project Essay Grade from holistic to trait ratings. PEG

is a collaborative effort with Dr. Ellis Page of Duke University that evaluates written English work (Dr. Page is currently working on a Spanish version of the software). The computer software was designed to grade prose based on stable statistical models. Over the past few years we've been able to demonstrate that PEG is not only more reliable than its human counterpart, but is also significantly more valid. The grading software is not "intelligent" and does not apply to all types of writing, but has been remarkably successful in mimicking the rubrics of trained readers.

In the Spring of 1999, we ran a study that was based on data from six raters who evaluated the written work of 1193 students. This study employed Project Essay Grade (PEG) to evaluate essays, both holistically and also with the rating of traits (*Content*, *Organization*, *Style*, *Mechanics*, and *Creativity*) for web-based student essays that serve as placement tests at IUPUI. In addition, the use of a TopicScore, or measure of topic content for each assignment, was incorporated into the PEG model to determine how well it would correlate with the five traits. In the first experiment, the essays of 807 students were used to create statistical predictions for the PEG software. In the second experiment, the ratings from a separate, random sample of 386 essays were used to compare the ratings of six human judges against those generated by PEG. The inter-judge correlation of the human raters was .58. But the prediction of all 6 judges, in the blind test for holistic ratings, reached .84 for the PEG program. Of the five traits evaluated, *Content* ($\underline{r} = .85$) and *Creativity* ($\underline{r} = .86$) had the highest PEG inter-rater reliability in the sample, though they did not differ significantly from the other traits (*Style*, $\underline{r} = .80$; *Mechanics*, $\underline{r} = .79$; *Organization*, $\underline{r} = .80$). The new *TopicScore*, a measure of content relevance, correlated

most highly with the trait of *Content* ($r = .52$), although the measure was not significantly higher than the ratings given for the other four traits. Finally, the PEG software was an efficient means for evaluating the essays with a capacity for grading approximately 6 documents every seconds. Those interested in PEG can visit the PEG web site at <http://134.68.49.185/pegdemo/>.

One area that has made slow, but steady progress has been that of image scanning. Now in its third year, the imaging operation has finally begun to retain a number of small clients who were looking for long-term document storage solutions. We have also begun to port applications based on the older Optical Mark Reading (OMR) technology to that employing the new imaging algorithms.

We hope that the annual report answers the questions you may have about the Testing Center and its structure, mission, operation, and indicators of success. A number of individuals have invested a significant amount of time to make this document interesting and readable. If you have suggestions or comments, please do not hesitate to contact us. E-mail regarding this document should be directed to: MShermis@IUPUI.Edu.

Section II: Reports From Program Areas

Placement Testing

Changes and Improvements in the IUPUI Placement Testing Program

This section describes the major changes and/or improvements made in placement testing procedures for the IUPUI placement testing program, including test development, administration, scoring, and reporting processes. As indicated in the previous annual reports, the placement tests were developed for the purpose of matching students with instruction appropriate to their academic preparation in English, mathematics, and reading. In response to technological advances, results on placement testing exit surveys, and other changes in student enrollment processes, the Testing Center continues to make incremental improvements in both test administration procedures and customer service. Therefore, it is pleasing to note that we do not have problems to report with respect to the quality of customer service in placement testing.

At the outset, it is important to mention that, overall, there was a noticeable drop of approximately 10% in the total number of students tested in 1999 (in contrast to the estimate for 1998).¹ It is likely that the drop in test flow reflects changes made in the admission and enrollment process at IUPUI. The Testing Facility proctors, however, experienced a relatively steady increase in the flow of students taking the respective placement tests, particularly during the months between March and July, with an average of approximately 200 students per week. Figure 1 shows the monthly counts of students tested in 1999.

¹ The total numbers of students who sat for the respective IUPUI placement tests in 1999 are as follows: **English: 5595** (a decrease of 9.4% when compared with the counts for 1998); **Mathematics: 6398** (down by about 10.6% from last year's count); **Reading: 5641** (down by approximately 12.7% from the 1998 estimate); and **Foreign Languages: 153** (an increase of about 36.6% in contrast with last year's count).

In addition to an increased test flow during the spring and summer periods, important changes focused on making quality improvements to the Web-based interface for placement testing, revision the placement testing brochures and related documents on reporting of test results, and ongoing refinements to the test directions for the three IUPUI placement tests (i.e., the computerized adaptive mathematics placement test (MA305), the computerized reading placement test (RD100) and English placement test (EN100)) so as to improve both clarity and presentation of the instructions.

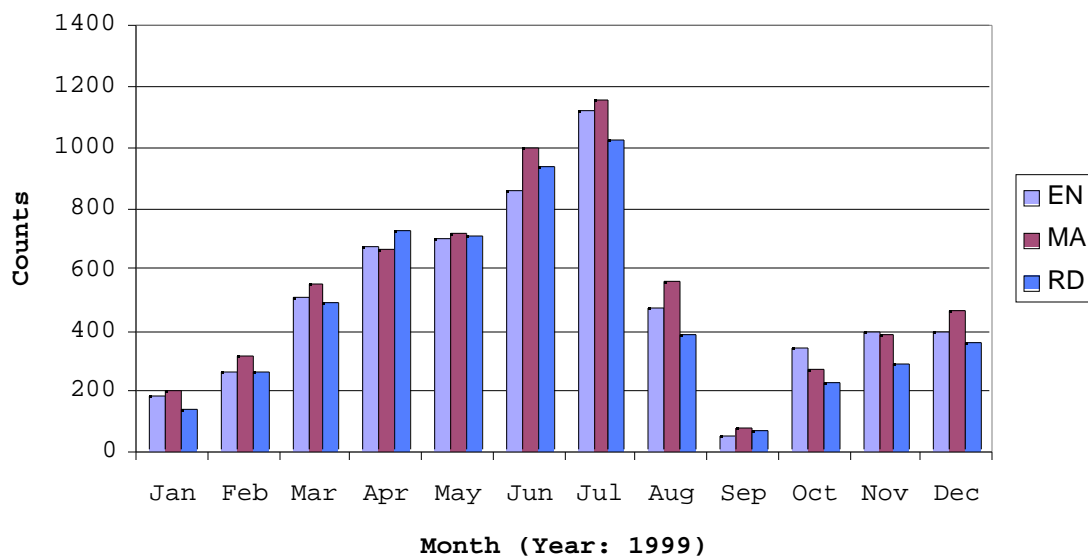


Figure 2. Monthly Counts of Students Tested in 1999 for English, Mathematics, and Reading.

So far, the conversion to online (Web-based) testing has provided the major advantages of convenience to students including the opportunity for remote placement testing, and for the Testing Center to address most of the performance and security issues regarding Internet-based testing. Further details on web-based placement testing are presented in the section on the Testing Center's development unit.

Other significant improvements in placement testing pertain to the recent change in placement test score reporting procedures, incremental improvement in Foreign Language Placement Testing, the relative improvement in predictive validity of the computerized adaptive test (CAT) in mathematics, implementation of the online Merkle Style Preference Inventory (MSPI) at the Testing Facility, and revision of the placement testing brochure to reflect expansion in the High School placement testing program. A brief description of the aforementioned changes is presented in turn.

Change in Placement Test Score Reporting Procedures

Effective May 27, 1999, the Testing Center implemented a new policy/procedure in the reporting of students' placement test results for math and reading. Following a directive issued on May 23, 1999, by the Dean of the Faculties, placement test scores were not to be disclosed to students upon completion of placement testing. Rather, students would only be issued a receipt for testing, and would obtain their placement test results through academic counselors/advisors. The rationale for this change was that students should receive the placement test results from professional advisors and faculty who could help them understand the results of their tests and help put them in context with their academic plans. (A complete synopsis of the change in placement test reporting policy and procedures, including the rationale, history, and implementation issues, is contained in the IUTS announcement that was posted on the IUTS-L list on May 27, 1999.)

Computerized Reading Placement Test

Following the recent conversion of the reading placement test into a Web environment, modification of the test directions and interface were done; thereby improving the test administration process. As

discussed later in this report, the exit surveys show a significant improvement in student perception of the clarity of test directions for the reading exam.

Although the current IUPUI computerized reading test is now Web-active, the content of the reading test remains unchanged. The computerized reading test consists of four parts namely, comprehension, reading rate, and three types of vocabulary tests (Word Attack, Words in Context, and Words in Isolation).

Also, the Testing Center recently participated in the Nelson-Denny Reading Test (Form G) CD-ROM National Norming Study that was conducted by the Riverside Publishing Company during the fall of 1999. This was part of Riverside Publishing's ongoing efforts to develop computerized versions of the Nelson-Denny Reading Tests (Forms G and H).

Computerized Adaptive Testing (CAT) in Mathematics

The major change in mathematics placement testing concerns the decision by the Placement Testing Advisory Committee to adopt ACT's new Windows-based COMPASS Mathematics Placement Test to replace the IUPUI computerized adaptive mathematics placement, effective January 4, 2000. Implementation of COMPASS addressed, at least in part, the concern regarding the alleged "under-placement" of students in higher-level mathematics courses at IUPUI. Further details regarding the adoption of the COMPASS Mathematics placement test will be presented in the next Testing Center annual report. As is the current practice, the Testing Center staff will periodically evaluate the effectiveness of the new computerized adaptive test in mathematics. The results of these ongoing efforts will be reported in the next annual placement validity report, which will be available at the following Testing Center Web site: <http://assessment.iupui.edu/testing/>.

English Placement Test

Like math and reading placement tests, the English written exam is now Web-active, since its implementation in early July 1998. The content of the exam, however, remains unchanged and as described in last year's annual report. The significant changes that were made last year relate to the improvement in the interface for test administration and the electronic transmission and reporting of the English test results. The test directions for the Web-based English placement test were revised accordingly to improve the clarity, accuracy, and presentation of the instructions.

The ongoing concern, at least from a psychometric perspective, is the relatively low validity coefficients for the English placement ratings. While the rating scale used by the department has sufficient variance for a good validity assessment, the fact that the outcome measure is based on grades tends to underestimate the true relationship between the two variables. The placement validity coefficient for a sample drawn from fall 1998 data averaged in the mid-teens (identical to last year's findings), but still useful for placement purposes. The department is currently investigating alternative measures that might be used as an outcome measure. For instance, the department is evaluating the possibility of using portfolios as an alternative for one writing sample. Most recently, the exploratory findings from the Project Essay Grade (PEG) study at IUPUI (cf. Mzumara, Shermis, & Fogel, 1998; Shermis, Mzumara, Olson, & Harrington, 1998) seems promising as the validity coefficients between PEG ratings and first-year English course grades are slightly higher than those for the regular placement test results. Of course, the efficacy or utility of the PEG ratings for predictive validity purposes at IUPUI has yet to be determined.

Foreign Language Placement Tests

Effective August 19, 1999, the Testing Center implemented new versions of the Foreign Language Placement Tests (FLPT: French, 1997, Form 3; Spanish, 1997, Form 5; and German, 1997, Form 3). Note that the revised tests and scoring procedures were reviewed by the faculty in the Department of Foreign Languages and Cultures, and they decided to retain the scoring algorithms and cutoff scores as the faculty felt that students were being properly placed in the foreign language courses at IUPUI (and there were only minor changes in the content of the tests).

Other software upgrades started in late 1998 include the development of the computerized Spanish placement test. This is essentially a feasibility task to computerize the foreign language placement tests (Spanish, French, and German) in conjunction with the University of Iowa (the publishers of the Foreign Language Assessment Project (FLAP) tests currently in use at IUPUI. Development of the web-based/computerized foreign language placement tests is still underway.

Another significant improvement involves the additional test dates for FLPT. At the request of the Department of Foreign Languages and Cultures, the Testing Center scheduled additional test dates for the IUPUI Foreign Language Placement Tests. The additional test dates were made to avoid the potential problem of having more misplaced students in foreign languages and/or avoid students deferring enrollment in language courses until a later semester. (A complete list of the IUPUI Foreign Language Placement test dates and times for the 1999-2000 academic year, is available at the following Testing Center's Web site: <http://assessment.iupui.edu/testing> (click on the Placement Testing section)).

Predictive Validity Study of the IUPUI Placement Test Scores

The annual validity study of the IUPUI placement test scores in English, reading, and mathematics was conducted and the final report was completed and distributed campus-wide in early December 1999. As for the previous annual report, significant improvements in the latest annual placement validity report included presentation of an executive summary, revised graphs that show the probability of success for a student who achieves a given placement test score, and inclusion of the preliminary results for the Project Essay Grade (PEG) study in written English.

In 1999, the average validity coefficients for IUPUI placement tests were as follows: .49 for math, .25 for reading, and mid-teens for English placement test. Figure 2 shows the average validity coefficients for the IUPUI placement tests for the past four years. As Figure 2 shows, there has been a steady increase in the validity coefficients for the computerized adaptive mathematics placement test since its implementation in late 1995. The validity coefficients for English and reading, however, have remained unchanged for the past three years (see Figure 3). The interested reader should consult Mzumara, Shermis, and Averitt (1999) for the latest placement validity report.

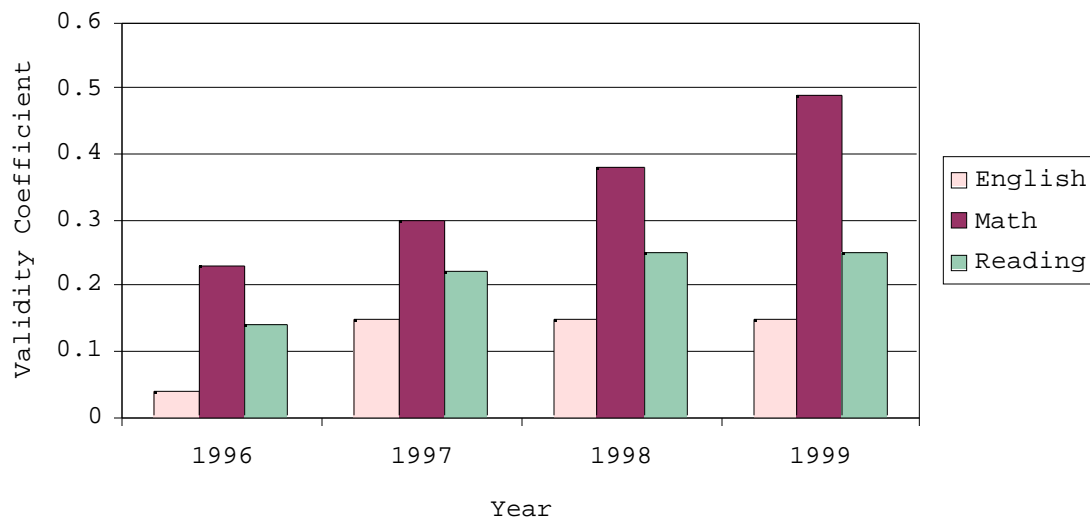


Figure 3. Predictive Validity Coefficients the IUPUI Placement Tests (1996-1999)

Frontline Meetings and Training of Work-study Employees

As for the past few years, ongoing efforts were made last year to address procedural and customer service issues among staff from the offices of admission, enrollment center, orientation services, University College, and Testing Center. The topics addressed at these joint meetings included the following: (a) review of admission, enrollment, placement testing, and orientation processes; (b) customer service; (c) use of FoxPro application in placement test scheduling; (d) use of IUTS in reporting of placement test results; (e) use of admissions screens in placement test scheduling and reporting of placement test results; (f) concerns regards administration of placement tests in the Microcomputer Testing Facility (e.g., noise, computer glitches and other interruptions in test administration, accuracy of test results posted in IUTS); (g) administration of placement testing exit surveys; (h) communication; and (i) other miscellaneous procedural issues. The joint meetings have been productive particularly in

ensuring that the frontline staff in the respective offices are in sync in their individual and collective efforts in improving the efficiency and quality of services to students.

At departmental level, on-the-job training and formal training sessions have continued to be provided to the work-study students in order to facilitate professionalism, thoroughness, and efficiency among the Microcomputer Testing Center (MTF) staff. A variety of topics (e.g., new placement testing procedures, test registration or scheduling of students for testing, customer service, generation of placement test reports, test security, confidentiality of information, Testing Center emergency procedures, teamwork, work ethics, etc.) are usually covered during formal training sessions conducted at least twice per semester. The topics are selected on the basis of the needs of the Testing Center proctors and receptionists and/or on the basis of a placement testing exit survey conducted at the conclusion of placement test administration. The MTF survey was designed to solicit information such as expertise and disposition of the test proctors, examinees' perceptions of the testing situation, examinees computing background, and so on. In addition to providing some suggestions for training topics, information from the MTF exit survey is used internally to monitor proctor specify potential technical innovations that might improve the examinees' test experience.

Furthermore, the regular group meetings of work-study employees have continued to offer the work-study staff an opportunity to present and discuss their concerns and/or suggestions for the improvement of placement testing operations at the Testing Center.

MTF Satisfaction Survey

As indicated in the past annual reports, the placement testing exit survey was designed to solicit information about students'

computing background, their perceptions of the testing experience, expertise and disposition of the proctors, and some demographic characteristics. The information obtained from the survey is used internally to monitor proctor behavior, suggest training topics, and specify possible technical innovations and recommendations that might improve the efficiency and effectiveness of the placement testing operations. The survey also provides valuable information for external communication purposes with other service units by demonstrating how the placement testing operations fit in with other IUPUI enrollment activities.

A summary of the exit survey results for the data collected in 1999 is presented below. The present results are based on a total pool of 4844 respondents, which comprised approximately 57% female and 43% male students. This past year was one of continued improvement, especially with respect to service delivery of the IUPUI web-based placement tests. The results of placement testing exit surveys have continued to show increased favorable rates over the years. For instance, 98% of students reported that using computers to take placement tests was *all right* or *very easy*. This indicates an increase of 2 percentage points over the results reported for 1998. With respect to clarity of test directions, 99% of students reported that the directions for English and reading placement tests, respectively, were *quite understandable* or *overly simple*, and 93% of examinees reported similarly for the math placement test (see Figure 4). Also, 99.5% of students reported that the Testing Facility staff and proctors were *courteous* or *very courteous* during placement test administration. Regarding technical knowledge of staff, 99.3% of students reported that the Testing Facility staff had *sufficient* or *extensive computer knowledge* that facilitated quality service in placement testing.

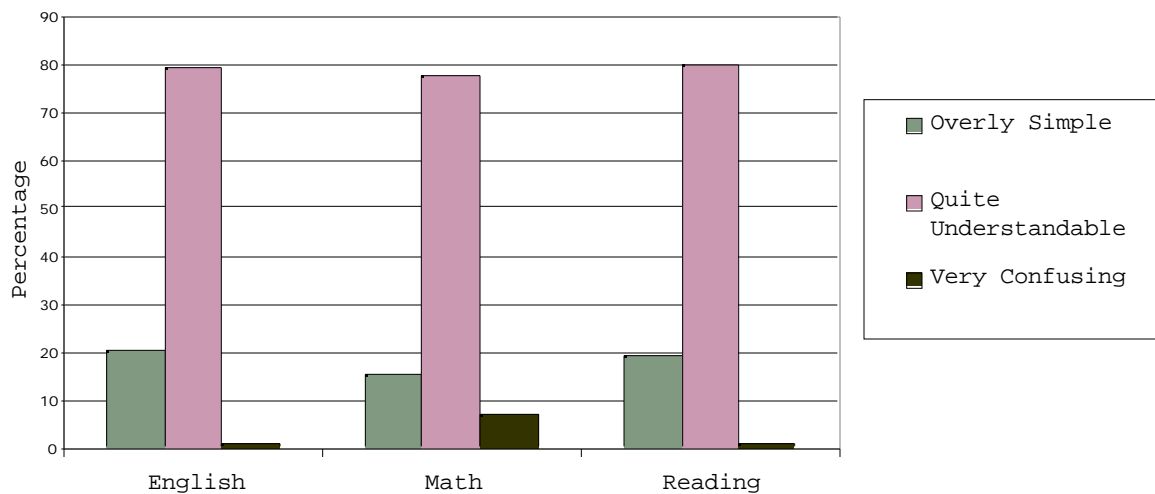


Figure 4. Student Perception of the Quality of Test Directions for the IUPUI Placement Tests

Overall, the results of the present survey suggest that most students have a very favorable disposition towards the Testing Center's computerized placement testing program. A somewhat remarkable and pleasant finding, however, was that only approximately 33% (in contrast to last year's 56%) of the students found the reading exam to be too demanding, whereas about 65% (up from 43% last year) felt that the reading placement test was an accurate measure of knowledge. The remaining 2% (or 90 out of 4139 students) reported that the reading placement test was a *waste of their time*. In contrast, approximately 35% (up by 7 percentage points from last year's 28%) of the respondents felt that the mathematics exam was too demanding; and 62% (i.e., down by 3 percentage points from last year's 65%) of students reported that the mathematics test was an accurate measure of knowledge. Only about 3% (or 150 out of 4609 students) reported that the mathematics placement exam was a *waste of their time*. With respect to the English placement

exam, approximately 10% of the students perceived the test to be too demanding; whereas 87% of the respondents said the exam was a valuable learning experience. The latter finding is up by 11 percentage points from the favorable rate reported in last year's annual report. Only approximately 2% of the students reported that the English placement exam was a waste of their time. Figure 5 shows a summary of the students' perception regarding the accuracy of the IUPUI placement tests in assessing knowledge in the respective content areas.

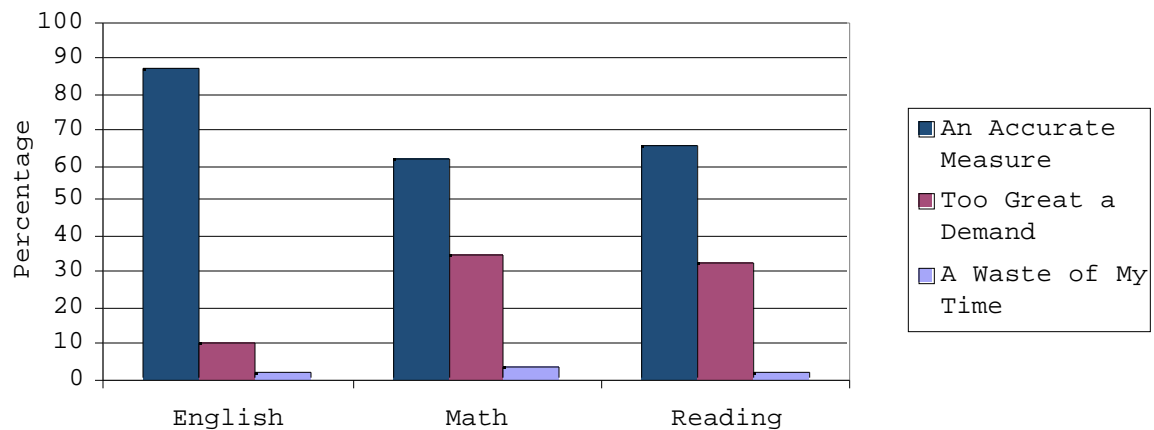


Figure 5. Student Perception of the Accuracy of Placement Tests.

Regarding students' experience in using computers, the present survey results suggest that less than 1% (or 27 out of 4786) of the respondents had no computer experience at all. In contrast, approximately 39% of the 1999 exit survey respondents reported having a great deal of computer-related experience. Despite the difference in response rates from the survey results of the past two years, the present findings indicate an increase in the number of students experienced in using computers. With respect to facility or ease in using computers, nearly 98% of the survey respondents reported that

using computers was *all right* or *very easy*, indicating an increase of 1 percentage point from the results reported in last year's annual report. In contrast, only approximately 2% of the respondents reported that use of computers was *very confusing*. Again, the present findings suggest a modest improvement over the results reported in the 1998 annual report, which suggests a noticeable change in the demographic characteristics of the student population from year to year. Thus, a majority of students (98%) reported feeling quite at ease in taking the computerized tests, and only a small proportion of students (2%) reported feeling *very confused* with computerized testing. Further development of the web-based interface and implementation of improved sets of computerized instructions (e.g., the revised test directions for English, reading, and adaptive mathematics as currently implemented at the Testing Facility) has made the students' testing experience to be pleasant, less confusing, and user-friendly. In addition, ongoing training of our test proctors in test administration procedures as well as proctors' vigilance or alertness during test administration, has helped to minimize unnecessary examinee confusion.

The Testing Center is in a continuous process of improving the efficiency and effectiveness of the placement testing operations, partly through the implementation of computerized adaptive testing procedures. The placement testing exit survey, therefore, provides valuable information that facilitates this improvement process and accomplishment of the goals and mission of the Testing Center.

Scanning

Overview of 1999

This section provides an overview of scanning activity, including imaging, optical scanning, and the processing of course evaluation

forms. In 1999 Scanning Services experienced new growth, in terms of clients, new hardware and software acquisition and reallocation of existing office space. In August of 1999 we began scanning and indexing documents for the I.U. Medical School's Department of Urology. To accommodate this new client the Testing Center purchased a new high-speed Panasonic KV-SS25D scanner. The I.U. School of Social Work and I.U. Kokomo Campus began using the Testing Center Scanning Services to scan and analyze their student evaluation forms on teaching. These additions required the Testing Center to rearrange the location of office equipment to make an optimum use of the existing office space.

Scanning Services, working in conjunction with the Testing Center Development team, began the design and programming of a web-based mechanism to conduct student evaluation of teaching and courses. Although initially many of our student evaluation clients showed little interest in such a mechanism, there is now a growing acceptance of this new approach. We will be working with the Dental School in the coming year to develop an online student evaluation application.

The Full-Forms computer in the scanning office was upgraded with a 10 gigabyte hard-drive and a new orb drive for data storage purposes. The IRTC server, where Scanning services stored most of their data, was retired in late December of 1999. Scanning Services data are now stored on a new machine over the network.

LXR•Test Grading

In 1999 Scanning Services had a 12% increase in the number of forms scanned for LXR•Test grading. The total number scanned was 52,733. This service is available to the entire campus and is used by many departments including the School of Dentistry, Allied Health, I.U. Law School, Sociology Department, and the Kelly School of Business to name a few. The NCS Opscan-5 Scanner is used to scan the standard IUPUI score sheets, and LXR•Test software (version 5.1.8) is used to process the data (with respect to test scoring and item analysis). Figure 6 gives a break down of LXR volume by month.

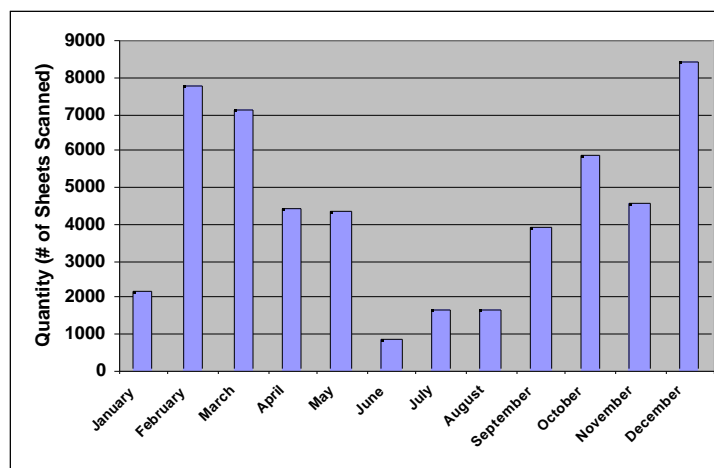


Figure 6. Scanning Volume by Month for LXR*Test.

From the 1,023 tests that were graded, Scanning Services generated an income of \$7,909.95.

Student Evaluation of Teaching/Courses

In 1999, the Testing Center Scanning Services experienced some new growth in terms of Student Evaluation of Teaching clients. Our new evaluation of teaching clients include I.U. School of Social Work,

I.U.P.U.I School of Journalism, and all courses on the I.U. Kokomo campus. Scanning Services has continued providing services to our Student Evaluation of Teaching (SET) clients and in 1999 we printed 79,037 SET forms and scanned, to date, 46,817 forms. The printing of forms, scanning and creation of data analysis reports produced an income of \$20,204.90. Services provided for SET, I.U. School of Social Work and I.U. Kokomo have generated a total income of \$21,294.70.

In the coming year Scanning Services will continue to provide the existing evaluation services; however we will emphasize a focus on the development of a web-based application to collect and analyze this information in the future.

Miscellaneous Scanning Jobs

We also received other miscellaneous work from various new clients. Most of these clients desired a form to be designed based on their own information needs. Two of the clients that came to our office who are not affiliated with Indiana University are Computer Performance Systems and Star Alliance.

The following campus departments sought Scanning Services for form design and data analysis: The IU School of Medicine, the School of Public Health, and the Information Management & Institutional Research (IMIR). Computer Performance Systems (external business) also came to us for a custom form. Scanning Services designed a custom form for each of these clients and then scanned and either ran data analysis or returned the raw data to the client. The forms were designed using the ScanPro forms design software. In November 1999, Scanning Services received the 2.2 upgrade for the NCS Design Expert software and all subsequent forms design will be done using this new software.

Also, the scanning office provided scanning and data analysis to the following clients: Indiana State Nursing Association, University

College, I.U. School of Continuing Studies and Star Alliance Corporation. We designed a form for Star Alliance in 1998 and are currently discussing a redesign of that form. We generated \$4,045.25 from these jobs.

Image Scanning

In April of 1999 Scanning Services met with representatives from the IUPUI-IU Medical Center Department of Urology. They requested consultation on the possibility of putting the Urology Department's patient files into an electronic storage system with easy retrieval. In August of 1999 we began scanning some of the Urology Departments older patient files. The initial scanning and indexing went well, however due to the nature of the documents, the NCS 5000i scanner was not capable of scanning high volumes. As a consequence Scanning Services purchased a Panasonic high-speed scanner. We now have the potential of scanning 2000+ documents daily with this new machine. To date we have scanned approximately 60,000 documents for the Department of Urology. Throughout the year, the Testing Center met with many departments to consult and give demonstrations about the Image Scanning System. Some of these departments include Clarian Marketing, School of Dentistry Student Affairs, and MERP.

A complete enumeration of services is listed in Appendix I.

External Testing

As a service to the university, the Testing Center has continuously supported testing for admissions to programs, as well as, certification testing (i.e. PRAXIS) for licensure. More information about external testing including scheduled test dates can be found at

the IUPUI Testing Center web site at
<http://assessment.iupui.edu/testing/external.html/>.

National Testing

These tests are given on national tests date, or as with some of the tests, as institutional tests (i.e. SAT) that our office provides. Approximately 6,000 students tested in the year 1999 at the IUPUI Campus. Tests administered under this program include the following:

SAT 11 times

LSAT 3 times

ACT 5 times

Praxis (PPST, NTE, Core Battery) 7 times

AMP 30 times

CLEP 11 times

MAT monthly

DANTES as needed (98 times)

Although ETS had planned on computerizing all of their tests by 1999, they were unable to do so, therefore, we have continue to provide paper and pencil testing. ETS has said that they will offer both computerized and paper and pencil testing. Though ETS is currently under exclusive contract with Sylvan Learning Centers and some test centers to administer their computerized and computerized-adaptive tests, our hope is to be able to participate in the expanded testing program.

Testing on the World Wide Web

In 1999, the IUPUI Testing Center tested 540 students for the School of Business and the Division of Continuing Studies for the Strong

Interest Inventory (SII) and the Myers-Briggs Type Indicator (MBTI), a popular personality assessment often used in conjunction with vocational counseling. Since the fall of 1997, the IUPUI Testing Center has tested over 1800 on the World Wide Web. The students logon to the WWW using the address provided by our office and then send payment by fax (credit card) or U.S. mail (credit card or check). Once payment has been received, students' results are sent to their counselor/professor via campus mail. This has saved an enormous amount of time.

In the summer of 1999, we established our Testing Center on the WWW for tests taken as Distance Learning classes. This will allow students from other universities to take their tests on the web at our institution. This will provide the student with a secure environment and a location close to where the student lives. The web site address is: <http://testing.byu.edu/consortium/usmap.asp>.

Independent Studies Testing

In 1994, the administration of independent studies exams was computerized and initiated in the MTF lab. The External Testing Program has continued to give the Independent Studies exam from IU as well as from other campuses in the MTF lab. In 1999, approximately 800 of these exams were administered. This operation generated \$10,136 in income last year, which helps to support the Testing Center. The breakdown of tests given per month is summarized in Figure 7.

A complete enumeration of services is listed in Appendix I.

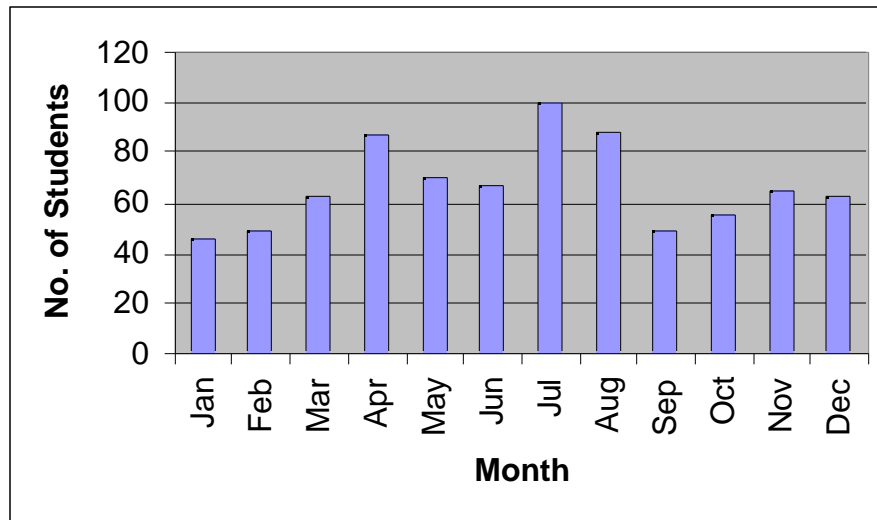


Figure 7. No. of Independent Studies Tests Taken.

Development

Development refers to two components of Testing Center activity. One component focuses on test development and is staffed by a graduate student research assistant. The second component centers on the development of computer-based tests, supplemental multimedia, and data collection mechanisms. This section is staffed by one FTE programmer and several work-study students.

The Development Office had four main areas of emphasis during the 1999 year. These included refining the Project Essay Grader (PEG) technology, working with Scanning Services to move the Student Evaluation of Teaching (SET) to a web-based environment, the adoption of a standards based math test (COMPASS-ESL) and Year 2000 (Y2K) readiness.

PEG Development

The Project Essay Grader technology has been running in 'production mode' for over a year now. PEG is now used to grade student

essays which are taken off-campus as part of the high school testing program.

The improvements to the Peg technology have been the implementation of Real Time Analysis. PEG, as envisioned and programmed by TruJudge Inc., was a batch-processing environment. Essays would take several days to a week before the analysis was completed. The version of PEG as augmented by the Development Office, allows for instant analysis. This is invaluable for several reasons. The first of which is the timely nature in which placement testing occurs. In addition, a rudimentary student portfolio system has been completed in which students can immediately receive feedback on their work using the same technology. Secondly, the real time nature allows for preprocessing of files submitted to the PEG System. The Development Office is completing work to make the upload of these essays from various formats such as Text, Microsoft Word and Word Perfect as well as the standard Web submitted forms already in place. This will allow for a greater range of applications to use this system and allow for a greater level of user expertise.

SET

The Development Office (lead programmer: Lien Nguyen) began the conversion for the Student Evaluation of Teaching system from a paper-and-pencil instrument to a Web-based medium (see Figure 3). This project is presently in the testing stage, and should be ready for implementation by summer 2000. An earlier version of the SET program was used for the evaluation of part-time teachers in the Computer Technology Department with good results. While the SET programming activities have addressed most technical issues, getting students to comply with filling out the new forms has been difficult. If left as a voluntary activity, rates of compliance tend to be lower than if they

Y2k Readiness

During the last several years, a focus of preparing the computers and their programs for the coming years 'Y2k' problems was made. Many hours were invested into certifying these systems and algorithms, but this was a necessity to ensure the safety and accuracy of the students' placement scores and other confidential information. Overall, efforts to keep everything running were successful with one minor exception—we had to retire the old Novell Server after six years of faithful service.

Future Directions

This has been a year of some retrenchment as the campus has re-evaluated its budget priorities. The Testing Center has been able to maintain a high quality of service for its placement testing operation, expand the imaging operation, but has been limited in its ability to conduct development and research on new web-based assessment technologies. Our plan is to continue development work with PEG, the electronic portfolio, SET, and other projects as funds become available. In particular, we are interested in expanding the capabilities of PEG to electronic portfolios, creating developmental norms for electronic documents other than tests, and integrating existing rating scales into our evaluation database.

Section III: Teaching, Research, and Service

In this final section, we list some of the external activities that speak to our contributions beyond the student service mission of the Testing Center.

Teaching:

Mark Shermis taught two courses for the Department of Psychology: Clinical Rehabilitation Psychology Assessment I (Psych I664) and Clinical Rehabilitation Psychology Assessment II (Psych I669). Howard Mzumara taught two sections of Educ Y520 Strategies for Educational Inquiry.

Doctoral Committees:

Terry Barker (Indiana University), member (Mzumara)

Research/Scholarship:

Articles/Chapters/Books Published:

Harrington, S., **Shermis, M. D., & Rollins, A.** (in press). The influence of word processing on English placement test results. Journal of Writing Research.

Mzumara, H. R. (1999, spring). Use of examinee's previous mathematics background in computerized adaptive testing and mathematics placement. Midwest Professional Association of College Testing (MPACT) Personnel's Newsletter, Come Saturday Morning, volume XI, No. III, p.5.

Printz, B., **Shermis, M. D., & Webb, P. M.** (in press). Stress buffering factors related to adolescent coping: A path analysis. Adolescence.

Shermis, M. D., & Lombard, D. (1999). A comparison of survey data collected by self-completed mail questionnaire and electronic mail. Journal of Business and Psychology, 14(2), 341-354.

Shermis, M. D., Webb, P. M., & Mzumara, H. R. (1999). An assessment of the concurrent validity and reliability of the Merkler Style Preference Inventory (MSPI). Journal of Career Assessment, 7(2), 173-185.

(under review)

Shermis, M. D., Koch, C. M., Page, E. B., Keith, T. Z., & Harrington, S. (1999). Trait ratings for automated essay grading. Manuscript under second review with Applied Measurement in Education.

Shermis, M. D., Rasmussen, J. L., Rajecki, D. W., Olson, J., & Marsiglio, C. (1999). Prompts and themes as sources of variance in grading college placement essays. Manuscript under second review with the Journal of Educational Measurement.

Shermis, M. D., Mzumara, H. R., Olson, J., & Harrington, S. (1998). On-line grading of student essays: PEG goes on the World Wide Web. Manuscript submitted to the Educational and Psychological Measurement.

Shermis, M. D., Mzumara, H. R., & Bublitz, S. T. (1997). Controlling testing and computer anxiety: Test performance under CAT and SAT conditions. Manuscript submitted to Journal of Educational Computing Research.

Unpublished Reports:

Mzumara, H. R., Shermis, M. D., & Averitt, J. M. (1999, December). Predictive validity of the IUPUI web-based placement test scores for course placement at IUPUI: 1998-1999. Indianapolis, IN: IUPUI Testing Center.

Shermis, M. D., Mzumara, H. R., Kiger, B. S., & Marsiglio, C. (1999, January). The Testing Center Annual Report 1999. Indianapolis, IN: IUPUI Testing Center.

Papers:

Shermis, M. D., Koch, C. M., Page, E. B., Keith, T. Z., & Harrington, S. (April, 1999). Trait ratings for automated essay grading. Paper presented at the annual meetings of the National Council on Measurement in Education, Montreal, Canada.

Shermis, M. D., Fogel, M. H., & Olson, J. J. (April, 1999). Controlling item exposure for web-based computerized adaptive tests. Paper presented at the annual meetings of the American Educational Research Association, Montreal, Canada.

Presentations:

Mzumara, H. R. (1999, March). IUPUI web-based placement tests, with special reference to Mathematics placement testing. Presentation given to Math faculty and staff at Indiana University Southeast, New Albany, IN.

Mzumara, H. R. (1999, July). IUPUI web-based placement testing. Presentation given to visiting scholars for the IUPUI Office of International Affairs, Indianapolis, IN.

Mzumara, H. R. (1999, October). Web-based placement testing at IUPUI. Presentation given at the 14th annual conference of the Indiana Association for Developmental Education, Indianapolis, IN.

Mzumara, H. R. (1999, November). Web-based placement testing at IUPUI. Presentation for the Best Practices Assessment Fair at the 1999 Assessment Institute, Indianapolis, IN.

Shermis, M. D. (1999, January). Electronic portfolios @ IUPUI. Presentation given to the IUPUI School of Engineer, Indianapolis, IN.

Shermis, M. D. (1999, February). Web-based placement testing. Presentation given for Marion County Schools, Indianapolis, IN.

Shermis, M. D. (1999, March). Grading essays by computer. Presentation given at annual meetings of the Michigan School Testing Conference, Ann Arbor, MI.

Shermis, M. D. (1999, April). Scanning the horizon: Making the move from optical to image scanning. Presentation given at the annual meetings of the American Educational Research Association, Montreal, Canada.

Shermis, M. D. (1999, May). Project Essay Grade: Writing feedback to improve student learning. Presentation given at the 17th annual Spring Symposium on Student Retention and Learning, Bloomington, IN.

Page, E. B., & **Shermis, M. D.** (1999, July). How PEG Works. Presentation given to the Riverside Publishing Company Board of Directors, Elk Grove, IL.

Shermis, M. D. (1999, August). Project Essay Grade and writing improvement: PEG goes to school. Presentation given at the annual meetings of the American Psychological Association, Boston, MA.

Banta, T. W., & Shermis, M. D. (August, 1999). Assessing student learning. Presentation given to new and associate IUPUI faculty, Indianapolis, IN.

Shermis, M. D. (1999, October). Strengthening basic skills of secondary students through testing via the world wide web. Presentation given to the faculty of Southport High School, Indianapolis, IN.

Shermis, M. D. (1999, October). Imagining imaging: Making the move from optical to image scanning. Presentation made at the 60th annual meetings of IACRAO, Indianapolis, IN.

Shermis, M. D., Koch, C. M., Page, E. B., Keith, T. Z., Harrington, S. (1999, November). New developments in grading essays by computer. Presentation given to the Delaware Educational Research and Development Center, Newark, DE.

Shermis, M. D. (1999, December). Strengthening basic skills of secondary students through testing via the world wide web. Presentation given to the faculty of Warren Central High School, Indianapolis, IN.

Exhibitor:

Mzumara, H. R. (1999, November). Exhibitor/Participant in the Best Practices Instrument Fair at the 1999 Assessment Institute, Indianapolis, IN.

Workshops:

Shermis, M. D. (1999, February). Psychology review. Presentation given for the Association for Advancement of the Behavioral Sciences, Philadelphia, PA.

Shermis, M. D. (1999, March). Psychology review. Presentation given for the Association for Advancement of the Behavioral Sciences, New York, NY.

Shermis, M. D. (1999, July). Presentation power: Extending the limits of the written word. Workshop given at the Information Technology Institute (AIR), Indianapolis, IN.

Shermis, M. D. (1999, August). Psychology review. Presentation given for the Association for Advancement of the Behavioral Sciences, Philadelphia, PA.

Shermis, M. D. (1999, August). Psychology review. Presentation given for the Association for Advancement of the Behavioral Sciences, New York, NY.

Shermis, M.D., & Mills, D. T., Marsiglio, C., & Mzumara, H. (1999, November). Web applications in assessment. Workshop given at the eighth annual Assessment Institute, Indianapolis, IN.

Grants in Progress:

Shermis, M. D., & Mzumara, H. R. (1997). College Placement Testing Through the World Wide Web: Preparing Students for Post-

Secondary Education. Grant submitted under the auspices of the Strategic Directions Charter of Indiana University (\$63,333).

Mzumara, H. R., & Shermis, M.D. (1997, January). Equating placement tests between IUPUI and Ivy Tech State College. Research funds granted under the auspices of the IUPUI/Ivy Tech Office of Coordinated Programs (\$4,000).

Grants Received:

\$4,000 per year from Clarian Health Values Fund, Advancement of Knowledge (Education)/IU School of Nursing: Evaluation of the Clinical Nursing Practice Capstone Course at IUPUI (1999-2002)

\$5,000 per year through the NSF/School of Science Grant on Evaluation of Reform in Science and Mathematics Education at IUPUI (2000-2002)

Grants Under Review:

Shermis, M. D., & Mzumara, H. R. (1999, September). NIDRR Field-initiated development project proposal on the establishment of a learning assessment center at IUPUI. Grant proposal submitted to the U.S. Department of Education (Office of Special Education and Rehabilitative Services National Institute on Disability and Rehabilitation Research) (\$437,806) Grant under review.

Graduate/Undergraduate Students Supported:

Jennifer Olson (M.A. student in psychology)

Marc Fogel (M.A. student in psychology)

Jason Averitt (M.A. student in psychology)

Consulting Engagements:

Mzumara:

Departments of Physics, Mathematical Sciences, and Biology, IUPUI. Grant writing for a collaborative research proposal to the National Science Foundation's Course, Curriculum, and (Evaluation of the project on reform in science and math education)

IU School of Nursing/Clarian Health Values Fund: Advancement of Knowledge (Education), Evaluation of IU School of Nursing's Clinical Nursing Practice Capstone Course.

Enrollment Center and Office of Orientation Services, IUPUI. Consulting for placement test scheduling and use of FoxPro scheduling application.

Department of Engineering and Technology, IUPUI. Consulting for Student Evaluation of Teaching and Courses.

Developmental Reading Program, School of Education, IUPUI. Consulting on statistical and data analysis for the Watson-Glaser Critical Thinking Skills study.

Department of Mathematical Sciences, IUPU Indianapolis and Columbus campuses. Generating FOCUS query reports (semester audits and rosters).

Department of English, IUPUI. Generating FOCUS query reports (Daily-counts of students scheduled for placement testing, semester audits and rosters)

Shermis:

Indiana Commission on Legal Education Advisory Group (Member)

Furthering High School-College Interactions (Lilly III grant) (Member)

St. Luke's United Methodist Church Adult Education Commission (Co-Chair)

Educational Testing Service, Princeton, NJ. Consulting for the CLEP Examinaton in Psychology (Member)

Tru-judge, Inc., Chapel Hill, NC. Consulting for computerized essay grading (Consultant)

Proposals/Manuscripts Reviewed:

Journal Reviewer

Journal of Educational Measurement (Shermis, 2 manuscripts)

Conference Reviewer

American Educational Research Association (Mzumara, Shermis;AERA)

National Council on Measurement in Education (Shermis; NCME)

Professional Associations:

Kiger:

Member, Midwest Professional Association of College Testing

Mzumara:

Member, American Educational Research Association

Member, American Evaluation Association

Member, American Statistical Association

Member, National Council on Measurement in Education

Member, Professional Association of College Testing (PACT) Personnel

Shermis:

Member, American Educational Research Association

Member, National Council on Measurement in Education
Member, American Psychological Association
Member, American Evaluation Association
Member, Phi Delta Kappa
Member, American Statistical Association

Committees:

National Committees (Shermis)

President, AERA SIG on Measurement Services

University-wide Committees

Mzumara:

Enrollment Center Steering Group/Entry Process Action Team
Testing Center Advisory Committee
Campus-wide Frontline Group, member

Shermis:

Academic Affairs Committee
Academic Policy and Planning Committee
Administrative Council
Program Review and Assessment Committee
Testing Center Advisory Committee

Department of Psychology Committees (Shermis)

Methodology Group
Clinical Rehabilitation Group

Training:

Conferences

Mzumara:

Assessment Institute, Indianapolis, IN (November 7-10, 1999)

NSF Summer Institute on Evaluation, Kalamazoo, MI: The Evaluation Center, Western Michigan University (June 2-25, 1999)

1999 NSF/MTS Internship in Program Evaluation, Kalamazoo, MI: The Evaluation Center, Western Michigan University

Conference of the Indiana Association for Developmental Education (Indianapolis, IN)

Shermis:

Michigan School Testing Conference (Ann Arbor, MI)

American Educational Research Association (Montreal, Canada)
National Council on Measurement in Education (Montreal, Canada)
AIR (Indianapolis, IN)
American Psychological Association (Boston, MA)
IACRAO (Indianapolis, IN)
Assessment Institute (Indianapolis, IN)

Appendix I: TESTING CENTER SERVICES

SCANNING OFFICE:

SET CLIENTS

The following clients use the Testing Center Scanning Services to scan and process their Student Evaluations.

School of Public & Environmental Affairs (SPEA): Print = 24,791; Scanned = 13,533

- IUPUI Campus
- Bloomington Campus
- Columbus Campus
- Fort Wayne Campus
- Kokomo Campus
- Northwest Campus
- South Bend Campus

IUPUI School of Engineering and Technology: Print = 26,124; Scanned = 9,207

- Construction Technology (CNT)
- Computer Technology (CPT)
- Electrical Engineering Technology (EET)
- Manufacturing Technology (MET)
- Electrical Engineering (EE)
- Mechanical Engineering (ME)
- Technical Communications (TCM)
- Organizational Leadership and Supervision (OLS)
- Biomedical Engineering (BMET)

IUPUI School of Nursing: Print = 14,669; Scanned 5,087

- Adult Health Department
- Environments for Health Department
- Family Health Department

IU Law School: In 1999 Print = 6,016; Scanned 3,639

- IUPUI Campus

IUPUI School of Physical Education (HPER): Print = 5,131; Scanned = 3,299

- IUPUI Campus

IU School of Social Work: Print = 3,307; Scanned = 2,118.

- IUPUI Campus
- Bloomington Campus
- North West Campus
- South Bend Campus
- IU East Campus

IU Kokomo Campus: Scanned = 6,236

- Undergraduate course evaluations

School of Dentistry: Print = 759; Scanned = 463

Oral Biology
Oral Facial Development
Dentistry Administration

School of Journalism: Print = 416; Scanned (not available)

IUPUI Campus

Tourism Convention and Event Management (TCEM): Print = 876; Scanned = 616

Herron Art School: Print = 4,487; Scanned = 2,813

For the year 1999 Scanning Services printed some 86,576 forms and scanned in the neighborhood of 47,011 forms. We also did about 36 hours of data analysis. Student Evaluations generated about \$21,000.00

LXR CLIENTS; The following clients use the Testing Center Scanning Services to scan and process various tests given throughout the semester.

Allied Health

Occupational Therapy Program
Physical Therapy Program
Respiratory Therapy Program

Sociology Department

IUPUI Campus

Kelly School of Business

IUPUI Campus

School of Dentistry

Oral Biology
Oral Facial Development
Dentistry Administration

SPEA

IUPUI Campus

Law School

IUPUI Campus

Tourism Conventions & Event Management

IUPUI Campus

Testing Center Scanning Services scanned 52,733 forms. From the 1,023 tests that were graded Scanning Services generated an income of \$7,909.95.

IMAGE SCANNING

The following clients use the Testing Center Scanning Services to image scan and archive their documents.

IU School of Urology

IUPUI Office of the Bursar

The Testing Center Scanning Services has scanned to date in the neighborhood of 69,000 documents.

MISCELLANIOUS CLIENTS:

The following organizations have used the Testing Center Scanning Services to scan and process various data sets. For the following clients we printed 6,208 forms and scanned 3,652 forms.

Sigma Theta Tau
I.U. School of Continuing Education
School of Public Health
University College
I.U. Medical School
Star Alliance
Indiana State Nursing Association
Staff Council Office
Office of Information Management and Institutional Research (IMIR)
Comprehensive Performance Systems
Planning and Institutional Improvement

EXTERNAL TESTING:

The Chauncey Group International

DANTES Tests
98 tests administered in 1999
Purpose: College Credit

Tax Certification
22 Tested in 1999
Purpose: Certification

ACT (formerly American College Testing)

Medical College Admission Test (MCAT)
480 tests Administered in 1999
Purpose: Admission Tests

ACT
500 tests Administered in 1999
Purpose: Admission Tests

MPRE
300 tests administered in 1999
Purpose: Bar Exam

Certifying Board of Dietary Managers (CBDM)
60 tests administered in 1999
Purpose: Certification

Educational Testing Service (ETS)

Praxis

3242 tests administered in 1999
 Purpose: Licensure (Education)
 College Board

SAT

68 Tests Administered in 1999
 Purpose: Admissions

Law School Admission Council

LSAT

549 tests administered in 1999
 Purpose: Admissions

IU Bloomington

800 Tests administered in 1999
 Purpose: Independent Studies Exam (Course Credit)

CPP

Strong Interest Inventory Test

540 Tests administered in 1999
 Purpose: Career Testing for Business Classes

Myers-Briggs Type Indicator

540 Tests administered in 1999 (These tests were administered by the professors)
 Purpose: Career Testing for Business Classes

Applied Measurement Professionals*

Test Name	#Tests Administered
AOTA	26
CRC	50
CBMT	4
CRA	30
CSE	200
CPFT	18
WRRT	160
CRTT	120
AHIMA	120
NCA	6
WOCN	60

*These are all certification tests.
 American Board of Otolaryngology

12 Tests administered in 1999
 Purpose: Training Exam

Columbia Assessment Services, Inc. (CES)

American Council of Exercise
240 Individuals assessed in 1999
Purpose: Certification

The Psychological Corporation

Miller Analogies Test
10 Tests Administered in 1999
Purpose: Admissions Testing