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## **Validating Accuplacer: Design, Implementation, Analysis, Gains**

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Investigators)

### **Near-Completion Planning Proposal**

#### Background:

*What placement system was used in the fall of 2007 within the Department of Humanities? How long have these systems been in use?*

For at least thirteen years, the English faculty in the Humanities Department, working with Office of Placement Testing, had identified placements in first-year composition courses using the following assessment system:

- New Jersey Basic Skills Placement Test (NJBSPT)
  - NJ Basic Skills Reading Comprehension score (limited response)
  - NJ Basic Skills Sentence Sense score (limited response)
  - NJ Basic Skills essay (open response)
- SAT
  - SAT Verbal

Hence, a student who scores a 500 on the SAT-Verbal, a 27 or above on the NJ Reading Comprehension, a 26 or above on the NJ Sentence Score, and a 7 or above on the NJ Essay would be placed in HUM 101, the traditional first-year writing placement. The present placement scores were adopted following 1980 recommendations of the Reading and Writing Advisory Committee of the New Jersey Basic Skills Council (ERIC ED 246 267). Subsequent placement scores were set locally to place students within each of the four cohorts delineated in Table 1. In cases where scores did not align with standard patterns, a weighted formula was used to place students.

*What is the impact of this system?*

The impact of this system is provided in the four-year cohort enrollment information described in Table 1.

Table 1: Enrollment in First-Year Writing, Fall 2004-Fall 2007

Cohorts	Numbers of Students Enrolled			
	Fall 2004	Fall 2005	Fall 2006	Fall 2007
<b>Cohort 1: ESL First-Year Writing</b>				
Eng 095	8	11	21	23
HUM 099S	30	27	20	31
<b>Cohort 2: Basic Skills First-Year Writing</b>				
HUM 099	200	287	322	217
HUM 099 Generation 1.5	--	15	30	39
<b>Cohort 3: Traditional First-Year Writing</b>				
HUM 101	393	389	416	464
<b>Cohort 4: Honors First-Year Writing</b>				
HUM 101H	81	81	93	89

While some of the placements are consistent—those in Hum 101H, for example—others are not. The fluctuation in HUM 099 placements--the 43.5% increase in HUM 099 from 2004 to 2005, followed by another 12% increase in 2006, followed by -32.6% decrease in 2007—suggests that either a radical shift has taken place in admissions or that there are irregularities in the present system. In that there exist no records validating that a radical shift in admission standards has occurred—as measured by the standard criterion measure of SAT scores—examination of the present system is warranted. In addition, placement scores established 28 years ago—and items developed during that time frame—suggests that a fresh assessment method is needed.

*How does the Department of Humanities define writing ability at the first-year level?*

At the first-year level, the four variables below, taken from the 1980 NJBSPT scoring guide, are the independent variables associated with the dependent variable of writing ability.

- Content and Organization
  - Single focuses in a topic
  - Ideas that are connected, though often loosely
  - Evident transition
  - Details are developed, though often unevenly

- Usage
  - Some errors evident that do not interfere with meaning
- Sentence Construction
  - Generally correct with some variety in sentence structure
- Mechanics
  - There is no consistent pattern of error
  - While some errors are evident, they do no interfere with meaning

While there are other levels of writing measured in the department—those levels associated with the writing found in student portfolios, information literacy capability, technical writing performance, and advanced levels of graduate professional and technical communication—the above definition (taken from Level 4 of the NJ Registered Holistic Scoring Guide) is the construct under examination in this study.

While the construct of sentence sense is embodied in the writing rubric, the Department does not have articulated standards for reading comprehension.

Validating Accuplacer—Spring 2008

*What studies are planned by the Department to validate the proposed Accuplacer system for the Spring of 2008?*

Study 1: Equating NJBSPT and Accuplacer. Study 1, suggested by Perry Dees, will calibrate equivalent scores between NJBSPT and Accuplacer. To obtain this calibration, a pilot group has been selected to take a version of the NJBSPT in close proximity with a version of the Accuplacer test. The pilot group chosen comprises the following classes:

Pilot Group:	Number of Students:
HUM 099-002	13
HUM 099-004	12
HUM 099S	15
HUM 099S	12
HUM 100-012	20
HUM 100-014	20
HUM 101-002	18
HUM 101-004	24
Total:	134

The following schedule is now in place:

Friday, January 25

During class time, the pilot group will take the 20 minute essay portion of the NJBSPT.

Thursday, January 31

The essay samples will be scored holistically by qualified instructors.

Friday, February 1

During class time, the pilot group will take the Reading Comprehension and Sentence Sense portions of the NJBSPT (45 + 35 minutes). The assistance of The Office of First-Year Students, and specifically Mrs. Margo Gilchrist in the Placement Office, will be needed to supply the tests.

Friday, February 8

During class time, the pilot group will take a version of Accuplacer.

Friday, February 15

Comparisons of the NJBSPT and Accuplacer results will be started, along with comparisons of all other criterion markers for the 134 students (e.g., SAT-Verbal scores, grades in HUM writing courses, and cumulative GPA.)

Study 2: Archival Study. Records of the students currently enrolled in each of the four cohorts will be analyzed to derive a predictive model based on the course grade as the dependent variable. This archival data will allow examination of a broader range of information and compare it to trends identified in Study 1. Coordinated with Perry Dees and Kamal Johsi, this work will be concurrent with the timeline of Study 1.

Study 3: Expert Review. Instructors of first-year writing courses will be identified to perform expert review of the items. The Nedelsky technique—a known method of standard setting used with NJBSPT and often adopted by ETS researchers—will be used to quantify the observations made of the instructors. The method will yield a series of placement scores that many then be used as basis of comparison to the patterns identified in Study 1 and Study 2. This study, designed by Chuck Brooks, will be concurrent with the timeline of Study 1 and will extend into March

Study 4: Surveys of Instructors and Students. At mid-semester in the spring, a survey will be administered to students and their instructors regarding perception of skills and placement. This work, designed by Nina Pardi, will be concurrent with the timeline of Study 1 and will extend into March.

Studies 1-4 will enable us to establish, with some precision, a set of placement scores to be used for students who will be concurrently taking the Accuplacer assessment. By early April of 2008, we plan to have these scores in place, ready to be entered into the Accuplacer branching framework, so that students will know their fall 2008 writing course placement.

Study 5: ESL Placements. A three step process will be coordinated by Jerry Paris.

Step 1. After each English Accuplacer test administration, John Coakley will give Jerry Paris the WritePlacer essays of all students **not** placed in HUM 101/101H who are possible ESL or Gen 1.5 placements.

Step 2. Jerry Paris will then evaluate these essays in order to place students whose essays show significant second-language characteristics into either ENG 095 or HUM 099s, depending on the extent of the second-language characteristics.

In this process, scores on the Accuplacer Reading Comprehension and Sentence Skills tests will be consulted, along with information on language background obtained from Accuplacer survey questions, to help confirm the ESL identification and confirm or adjust the specific placement. However, these two scores and the background information will be used only in an advisory manner. (For example, a comparatively low Sentence Skills score tends to confirm an ESL placement; however, a comparatively high Sentence Skills score does not necessarily disconfirm the placement.) Janet Bodner and Nina Pardi, from the ESL program, will participate in this step, to confirm placements, when necessary, and to provide additional review for borderline placements.

Ultimately, the basis for ESL placements is the extent of second language features exhibited in the essay, as determined by expert opinion.

Step 3. John and Jerry evaluate the remaining essays (the essays of possible ESL or Gen 1.5 placements--see STEP ONE--not placed into ESL) to determine HUM 099-1.5 placements. Essays from this remaining group **not** receiving placement into a HUM 099 Gen-1.5 section receive a standard HUM 099 placement.

As with the placement process for ENG 095 and HUM 099s, scores on the Accuplacer Reading Comprehension and Reading Skills Tests are consulted in determining a GEN 1.5 placement, along with language background information from the Accuplacer survey questions. However, the primary basis for the HUM 099-1.5 placement is the nature and extent of second language features exhibited in the essay, as determined by expert opinion.

Study 5 will allow special attention to the placement of students in Cohort 1 and the Generation 1.5 students in Cohort 2. In that NJIT has an extraordinarily diverse student population, the complexity of the instructional system appears warranted; as such a nuanced placement system, with special attention to students with ESL backgrounds, is warranted.

## Validating Accuplacer—Fall 2008

*What studies are planned by the Department to validate the proposed Accuplacer system for the Fall of 2008?*

Study 6: Further Examination of ESL Placements. In the first week of classes, students placed into ESL classes (ENG 095 and HUM 099s) will be given additional testing to confirm the placement. This testing includes 1) the structure (grammar) section of the Comprehensive English Language Test (CELT) and 2) a fifty minute in-class essay. The student's placement is then reviewed in the light of the performance on the CELT and the in-class essay. If indicated, the placement is changed (including placement out of the ESL program.) Records will be kept of all re-adjustments made during this period.

Study 7: Constructing a Model. When grades are posted at the end of the fall 2008 semester, a model will be constructed using all the information gained in Studies 1-5 from the spring and Study 1 from the fall. All independent variables, from Accuplacer scores to surveys, from ESL initial placements to ESL confirmations—will be entered into the model. Using the course grade as the dependent variable, we should be able to develop both prediction and efficacy models.

The implementation of Accuplacer will allow systematic analysis of student placement. Such an analysis will allow examination of the admissions process, the placement system, and the first-year writing curriculum.

## Validating Accuplacer: Longitudinal Studies with the Department of Mathematical Sciences

*What kinds of studies are planned after those planned in the fall of 2008?*

The model can be made more robust with subsequent studies as NJIT's enrollment capacity grown. In addition, joint research should be begun with the Department of Mathematical Sciences so that profiles of admitted students can be developed to provide richer information about the relationships between admission decisions, placement, and success at NJIT.

### Cost:

*What costs are associated with the planned validation study?*

At present, the following tasks are planned, but compensation has not been determined:

Reading student essays in Study 1. In that it will take a long morning to read the 134 essays, \$150 per reader is requested. The more readers, as many as 7, will lighten the reading load. Breakfast and lunch should also be budgeted.

Providing student incentives in field-testing. A bookstore credit may serve well here, as well as a raffled item of interest (an iPod has worked well in previous research) to those students scoring in the top quartile on both the NJBSPT and Accuplacer assessments.

Programming the branching function. While this is a mechanistic process, someone will have to work with John Coakley to enter the placement scores.

Support of lecturers. The expertise of Nina Pardi and Janet Bodner will be needed in several phases of the process, and honoraria should be planned for both.

While there are no direct financial considerations, planning for time and talent will be needed for the following tasks:

Weighted formula design. Scores on the elements of Accuplacer will not align neatly across elements of the examination; thus an elementary formula has to be designed and entered into the branching function of the Accuplacer system.

Branching mechanics. From screen design to placement procedures, talent will be needed to perform basic configuration. A fine summary of this process has been developed by El Paso Community College, and we may want to use that process as a potential model.

Web design. A web page, to be updated as our studies emerge, should be available to shareholders in this process. This information will be especially important as placement decisions are made.

#### Research Presentation and Publication:

*What are the research gains for NJIT?*

Extraordinarily little is known about the process of establishing and validating placement scores associated with Accuplacer. The peer reviewed literature reveals but a few applicable studies to our own. (See, for example, James, C. (2006), "Validating a Computerized Scoring system for Assessing Writing and Placing Students in Composition Courses," Assessing Writing 11(3), 167-178. This is one of fewer than five studies performed by writing assessment researchers.) The present studies will allow a series of presentations to be made locally (NJ College English Association) and nationally (Conference on College Composition and Communication). Publications in journals such as Qualitative Report and Assessing Writing are realistic, obtainable goals.

Collaboration with the Department of Mathematical Sciences would result in similar gains in venues such as The Journal of Educational Research.

Impact:

*What is the impact for NJIT shareholders?*

- Students and their parents will have available a validated placement system, along with and readily-available information on the web regarding the placement system itself.
- Admitted students will benefit by placement results that will yield removal of any barriers to graduation.
- NJIT instructions will continue to advance their reputation for student-centered education research, a reputation that will yield peer-reviewed publication and external funding opportunities.
- The university will gain the implementation of a validated system, the validation resulting in a gain in public perception for one of the nation's most diverse campuses.