I. Abstract, goals and objectives outlined in the grant proposal

It is important to document and build baseline “information competence” early in students’ experience at the university. The goal of “Project Baseline” was to use the Information and Communication Technology Literacy (ICT) Assessment (renamed “iSkills” during the implementation of this grant) as a formative and summative assessment tool to evaluate students’ information competence in first year programs at California State University Sacramento (CSUS). There are four first year programs, collectively called “Freshman Programs.” They are described at the web site: [http://www.csus.edu/acaf/ge/freshmanPrograms/](http://www.csus.edu/acaf/ge/freshmanPrograms/):

1) Freshman Seminar Program
2) University Learning Community Program
3) Educational Opportunity Learning Community Program (EOP)
4) General Education Honors Program

Combined these programs reflect the cultural and socioeconomic diversity of first time freshman at CSUS. The project supported the following objectives:

1) Collection of iSkills Assessment data by administering the core test as a pre-test and post-test to 250 CSUS freshman
2) Development of best practice information literacy lessons and publication of these lessons via a project Website
3) Faculty professional development for freshman program faculty using the “lesson study” model.

The project was conducted over two academic years, 2006/2007 and 2007/2008.

II. Project activities – please note valuable collaborations, partnerships, innovative e-learning tools or resources used within the project

Faculty participated in the design, implementation, and assessment of a lesson that focused on one or more ICT standards. Below is a table that summarizes the faculty, academic departments and programs that participated in “Project Baseline” over two years.
Table 1: Summary of Faculty Participants for “Project Baseline”

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Faculty Participants</th>
<th>Program</th>
<th>Course</th>
<th>ILT standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Ricky Gutierrez (Criminal Justice)</td>
<td>Freshman Programs</td>
<td>CRJ021 Freshman Seminar</td>
<td>1, 1. a,c,d nature and extent</td>
</tr>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Hui-Ju Huang (Teacher Education)</td>
<td>Freshman Programs</td>
<td>EDTE 021 Freshman Seminar</td>
<td>5.2.f Plagiarism</td>
</tr>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Melanie Loo (Biology)</td>
<td>Freshman Programs</td>
<td>NSM 021 Freshman Seminar</td>
<td>5.2.f Plagiarism</td>
</tr>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Pia Wong (Bilingual Multicultural Education)</td>
<td>Freshman Programs</td>
<td>EDBM 021 Freshman Seminar</td>
<td>3.2.c 3.4.c Bias</td>
</tr>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Adrienne Lawson (EOP)</td>
<td>EOP</td>
<td>ETHN021 Freshman Seminar</td>
<td>3.2.c 3.4.c Bias</td>
</tr>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Margarita Berta-Avila (Bilingual Multicultural Education)</td>
<td>Freshman Programs</td>
<td>EDBM 021 Freshman Seminar</td>
<td>3.2.c 3.4.c Bias</td>
</tr>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Linda Martin (Communication Studies)</td>
<td>Freshman Programs</td>
<td>COMS 5OR 4 Public speaking</td>
<td>2 and 4 access and use info effectively</td>
</tr>
<tr>
<td>2006/2007 (Year 1)</td>
<td>Larry Boles (Speech Pathology)</td>
<td>Freshman Programs</td>
<td>SPHP 021 Freshman Seminar</td>
<td>3 evaluate and incorporate</td>
</tr>
<tr>
<td>2007/2008 (Year 2)</td>
<td>Vanessa Arnaud (Foreign Language)</td>
<td>GE Honors Program (2 sections)</td>
<td>Honors 1 Freshman Seminar</td>
<td>5 Legal ethical use</td>
</tr>
<tr>
<td>2007/2008 (Year 2)</td>
<td>Ricky Gutierrez (Criminal Justice)</td>
<td>Freshman Programs</td>
<td>CRJ021 Freshman Seminar</td>
<td>1a, d 5a, b, c 4f info for specific purpose</td>
</tr>
<tr>
<td>2007/2008 (Year 2)</td>
<td>Vivian Orcasitas (EOP)</td>
<td>EOP</td>
<td>ETHN021 Freshman Seminar</td>
<td>3 evaluates info</td>
</tr>
<tr>
<td>2007/2008 (Year 2)</td>
<td>Delmy Montenegro (EOP)</td>
<td>EOP</td>
<td>ETHN021 Freshman Seminar</td>
<td>1 nature and extent of info</td>
</tr>
</tbody>
</table>

The Core Level iSkills test was used as a pre and post-test to measure the impact of the lesson. The pre and post-test score for each section are reported and analyzed in the next section.
Test Administration
Testing was done both years in the Library Instruction Lab 2023 by Linda Goff who coordinated schedules with each participating faculty member. Pre-testing classes were scheduled during September/October while post-testing was done in November/December. Testing sessions were 75 minutes which corresponds to regular class session for T/Th. Special arrangements for M/W/F 50 minute classes had to be made. Preliminary information with login information and how to login and set up profiles and create background data was sent to instructors who then shared that information with students.

Valuable Collaborations/Partnerships with the following campus projects and groups were utilized for “Project Baseline”:
CSUS University Library
CSUS Freshman Programs
CSUS Civic Learning Institute (CLI)
CSUS College of Education, Department of Teacher Education
CSUS College of Education, Department of Bilingual and Multicultural Education
Hewlett Packard Technology for Teaching Grant for Higher Education
Hewlett Packard Leadership Grant for Higher Education
CSUS Institutional Research

The following Innovative e-learning Tools and Resources were utilized:
Hp Tablet and Mobile Technology
Laptop/smart classroom technology
CSUS Faculty Resource Center
CSUS Center for Teaching and Learning

III. ICT Literacy analysis - Detailed information on the methodology and results gained from utilizing the iSkills (formerly ICT Literacy Assessment) tool
Core Level iSkills data on Sacramento State Freshman students was collected twice. First freshman students took the iSkills test at the beginning of the Fall semester – this is the “Pre-test”. Each instructor participating in this project then delivered an information literacy lesson based on one or more ACRL ICT standards. After the completion of the lesson students took the iSkills test again- this is the “Post-test”. 237 Freshman students during the Fall 2007 and 2008 semesters generated pre and post-test scores.

The data created by the iSkills test was compiled and analyzed in two ways:

1. **Class Level Relevant Results**: The raw pre and post-test scores for each student were downloaded from the ETS secure site into an excel spreadsheet. The data was then manually separated into groups that corresponded to the separate sections of Freshman Seminar. Each freshman seminar enrolled a maximum of 25 students. The average total test score for each of the 11 Freshman Seminar classes that participated in the project was calculated in the spreadsheet.

2. **Program Level Relevant Results**: The report generating software provided on line by ETS was used to analyze groups of 100* or more students along 7 ICT dimensions, Define, Access, Evaluate, Manage, Integrate, Create, and Communicate. The average score over all 237 students in each of these dimensions was calculated using this program and then
compared to the “median score” of all students who have taken the test. * During this project’s implementation the minimum group size for generating this report was reduced to 50. This change is still not enough to provide separate reports for individual freshman seminar classes which have an enrollment of 25.

Both the Class Level Relevant Results and Program Level Relevant Results are shown and discussed below:

1. Course Level Relevant Results.

A. Observations:
1. Eleven sections of Freshman Seminar took the iSkills pre and post-test
2. Eight of the Freshman Seminars were standard general enrollment sections (FS), two were honors sections (HON) and three were EOP sections (EOP).
3. Six of the Eight “Standard” sections showed a slight increase from the pre to post-test scores. Two of the sections showed a slight decrease from the pre to post-test scores. Both Honors sections showed a slight increase from the pre to post-test scores.
4. One of the three EOP sections showed a 10% increase from the pre to post-test and 2 of the sections showed a slight decrease.

B. Things to consider in data interpretation:
1. Because the pre and post-tests administered were identical tests, there is some concern about the validity of using this pre/post-test comparison as a measure of change in student ICT skills. In cases where students improved their scores, was it because they were better at taking the test (not the actual ICT skills) the second time around? Other tests such
as the Information Seeking Skills Test (ISST) have multiple forms of the test to ensure validity. [Cameron 2007]

2. Student motivation to perform well on the pre-test (administered at the beginning of the term) and the post-test at the end of the term (some administered during finals week) may have been different. None of the courses used iSkills scores to determine course grades and several students spent 20-30 minutes completing the 75 minute test.

3. Differences observed between the pre and post-tests may not be significant given the testing circumstances described in 3 above and the sample size of each class which was 25 students or less. In fact a statistical analysis of the 2006 pre and post-test scores by the Sacramento State Office of Institutional research showed no significant difference between the pre and post-test scores.

4. There is a mismatch between ACRL standards and the iSkills test dimensions. Faculty designed their ICT lessons based on the published ACRL standards:

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**Information Literacy Competency Standards for Higher Education**

*From the web site:*

[http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.cfm](http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.cfm)

**Summary of Standards:**

The Association of College and Research Libraries (ACRL) States:

An information literate individual is able to:

1. Determine the extent of information needed
2. Access the needed information effectively and efficiently
3. Evaluate information and its sources critically and Incorporate selected information into one’s own knowledge base
4. Use information effectively to accomplish a specific purpose
5. Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethnically and legally

The iSkills test evaluates 7 dimensions of Information Literacy: Define, Access, Evaluate, Manage, Integrate, Create, and Communicate which are described below:

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**7 Dimensions of iSkills**

1. Define: Understand and articulate the scope of an information problem in order to facilitate the electronic search for information.

2. Access: Collect and/or retrieve information in digital environments. Information sources might be Web pages, databases, discussion groups, e-mail, or online descriptions of print media.

3. Evaluate: Judge whether information satisfies an information problem by determining authority, bias, timeliness, relevance, and other aspects of materials.
4. Manage: Organize information to help you or others find it later

5. Integrate: Interpret and represent information, such as by using digital tools to synthesize, summarize, compare, and contrast information from multiple sources.

6. Create: Adapt, apply, design, or construct information in digital environments.

7. Communicate: Disseminate information tailored to a particular audience in an effective digital format

Although the ACRL Information Literacy Competency (ILC) Standards for Higher Education are similar to the iSkills dimensions they are not the same. The first 3 standards and dimensions cover the same general categories but there is substantial difference between the remaining standards and dimensions. Katz states “These [iSkills] areas mirror the ACRL standards and other related standards, but focus on elements that were judged most central to being sufficiently information literate…” (Katz, 2007). We would agree that the 7 dimensions mirror rather than match the ACRL ILC Standards. In fact, the mismatch between the ACRL standards and the iSkills test is a significant factor to consider when interpreting our data since four of the eleven sections of freshman seminar received instruction on ACRL standards 4 and 5 which are not described by the iSkills dimensions. For example, ACRL Standard 5.2.f on plagiarism is not included in one of the 7 iSkills dimensions nor did it appear on the iSkills test. (Note: The document published by ETS entitled “Higher Education ICT Literacy Assessment fit with ACRL Standards” (ETS, 2007) does not map the iSkills dimensions described by (Katz, 2007) onto the ACRL standard but appears to map the ACRL standards/performance indicators to another set of ETS “ICT Literacy Assessment Performance Indicators”.

C. Inferences from the data:
1. There is no clear evidence that the instruction provided in any of these Freshman seminars had an effect, positive or negative, on student performance on the iSkills test.
2. In general EOP sections had the lowest average iSkills score, Standard sections had slightly higher average scores, and the Honors Sections had the highest average iSkills score.
3. Considering the uncertainty in the average class score, either pre or post-test data can be used as a measure of baseline information competence of Sacramento State Freshmen.
Program Level Relevant Results: The average scores for each of the 7 iSkills dimensions of all students taking the pre and post-tests for each year, 2006 and 2007, are shown below:

A. Observations:
- The 2006 pre-test shows that the 2006 freshmen group performed below the iSkills national median on 6/7 measures, meeting the median score only for "integrate".
- The 2007 pre-test shows that the 2007 freshmen group performed below the iSkills national median for evaluate, but met or exceeded the median score for the remaining measures.
- The 2006 post-test scores increased slightly for access, evaluate, and manage.
- The 2007 post-test scores increased only for evaluate and decreased for define and communicate.

B. Things to consider in data interpretation:
- 119 students took both the pre and post-test and attended intervention lesson in 2006
- 118 students took both the pre and post-test and attended intervention lesson in 2007
- Based on pre-test data, about 30% of students spent 40 min. or less completing the iSkills test which was designed to be taken in a 75 min. period.
- There were 9 students in Fall 2007 who took completed the test in less than 30 min.

C. Inferences made from the data:
- The pre and post-test scores across all measures fall within 10% of the national median.
- No inferences about the effectiveness of instruction can be made from the pre and post-test scores. Student motivation may have affected student performance on the test, since this was not a high stakes test. Closer analysis of the time spent by students to complete not only the test, but each task on the test may explain why the post-test scores on some measures were lower than the pre-test scores in 2007.
IV. Deliverables – please include the URL for the project website (see http://www.calstate.edu/LS/Outcomes for previous examples), and append any relevant materials developed (e.g. rubrics, revised assignments, URL for tutorials, etc.). Please provide proper attribution of individuals who developed the materials (name, date, campus) in either the header or footer of the document.

The link to website below contains all required information including instructional materials: http://library.csus.edu/services/inst/ProjectBaseline/index.html

IV. Assessment – Please describe outcomes as well as activities in which you engaged or those which you plan to implement in order to measure the effectiveness of project goals and objectives.

The specific goals and objectives outlined in the project proposal have all been completed. Baseline “information competence” data on 239 freshmen at Sacramento State was collected using the iSkills Test. iSkills was tested as both a formative and summative assessment tool to inform curriculum and program design for first year programs at Sacramento State. Data was collected over the four first year programs:

1) Freshman Seminar Program
2) University Learning Community Program
3) Educational Opportunity Learning Community Program (EOP)
4) General Education Honors Program

This project completed the following objectives:
1) Collection of iSkills Assessment data (pre and post intervention) on 239 Sacramento State freshman
2) Development of 8 best practice information literacy lessons published on the website.
3) Faculty professional development for freshman program faculty using the “lesson study” model was successfully conducted in year one of this project.

V. Campus Sustainability and Applicability within CSU – Please comment on the sustainability of this project beyond the grant cycle on your campus, and address project strategies and models that can be applied to other CSU campuses and beyond.

The administration of iSkills to all incoming freshman is not financially sustainable by Sacramento State Freshman Programs. At a cost of $18.75 per student Freshman Programs it would cost $46,875 to support testing for each of the 2500 students that enroll each academic year. In addition, the use of lab facilities and test administrator and proctoring time must be factored in to this equation. 100 testing sessions would take up 125 hours of lab time and would require additional lab facilities to accommodate all freshman students in a proctored environment.

However, the curriculum development process and products that have been created as a result of “Project Baseline” are sustainable. The lesson study process of collaboratively creating and testing lessons on Information Literacy went very well and participating faculty enjoyed the partnerships formed by working on a common lesson. We plan to build this curriculum development model into future projects. The deliverables from each faculty that participated included a lesson, student worksheets, assessments, and student work and are posted on the project website. This project has become the first step towards creating a collection of best practice lessons, assessments, and student work that will address each topic in Freshman Seminar.
Another sustainable component is the partnership formed between Freshman Programs and the University Library. The project has provided both the Director of Freshman Programs and the Head of Instructional Services at the University Library with new perspectives and ideas to implement in the Freshman Seminar information literacy curriculum.

As part of this grant Sacramento State hosted a First Year Experience Regional Conference, “Partnerships and Practices” on August 26, 2008, that included seminar topics on information literacy and assessment. A Collaborative presentation by Sacramento State and CSU San Marcos entitled “Understanding our First Years: Two Studies and a Comparison” was presented by Linda Goff and Lynn Tashiro of Sacramento State and Gabriela Sonntag of CSU San Marcos. “Project Baseline” funded conference registration for 5 Librarians from CSU System: CSU East Bay, CSU San Marcos, and Cal Poly Pomona to attend as well as the CSU system Manager for Information Literacy Initiatives, Stephanie Brasley.

Campus Applicability: How does “Project Baseline” apply to Sacramento State?

The use of iSkills as a formative assessment did not work well for students and faculty, but did have some value as a program assessment.

Consistent with the intent of the designers of the iSkills test we would agree that the iSkills test provides more information about the test taker than standard multiple choice tests. The test records each click of the mouse as the test taker completes a task. This data is then used to create a cognitive map showing decisions made by the test taker. The test takers map is then compared to an “expert” map and feedback on this comparison is given along with the ETS score report. A sample score report sent to students showing both total score and performance feedback is shown below:
The student is given a percentile ranking relative to all other students who have taken the test before. The Performance Feedback tells the student how they performed on tasks that tested the 7 dimensions described previously. As an example feedback on the dimension “evaluate” is shown above. In red are the questions we had as we read the score report. Without the original question and the “expert” map to compare to, the performance feedback has little value to the student as a tool for improving performance on this task. The student is also not able to see how they compare to other test takers on this measure of “evaluate”. The iSkills feedback and data available to the student was not in a form that facilitated learning.

The data available to faculty was similarly difficult to use as a tool to improve learning and instruction. The following data and reports could be made available to faculty by the iSkills site administrator:
1. Individual student score reports such as that described above for each student.

2. Aggregate score reports on the 7 measures of information literacy for groups of 75 students or more.

3. The total data download which is a spreadsheet with 50 fields including total scores and demographic data.

Not many faculty would have the time or interest to examine each of the student score reports given their indirect connection to the ACRL standards. The aggregate score reports are not useful for our faculty either since our freshman seminar class size is 25 maximum and the reports can only be generated for groups of 75 or more. The raw data download is very rich with information and can be separated by individual class, however the time and effort is required to format and interpret the spreadsheet into an instructor friendly format is prohibitive for most faculty who spend about ½ week of instruction on information literacy. Although information literacy is a topic in freshman seminar, Sacramento State has chosen to meet many of the information literacy standards within courses in the major and has established Information Competency as a graduation requirement within each major. The iSkills information about what students are able to do with technology and information is not communicated in way that will impact instruction in the classroom.

Although our project did not find the iSkills test to be a useful tool for students or faculty to improve learning, the iSkills test did provide a snapshot of our entering freshman and a baseline...
measure of their ICT skills. This may be useful for First Year Program Administrators as a benchmark for designing curriculum in Freshman Seminars. We also investigated student performance on the iSkills test as an indicator of college success and retention. The data download for the 2006 pre-test was examined by the Sacramento State Office of Institutional Research. Statistical analysis of the data showed no correlation between student iSkills score and first year GPA, which is one predictor of freshman student success and retention. Although the iSkills test was an interesting and unique test its practical use in curriculum design and a measure of student learning still needs some development. “Project Baseline” only examined the core test, it is possible that the advanced test will have a higher correlation to student success and retention.

Results of this study were disseminated at the CARL Conference, April 4, 2008, Irvine CA and at the Sacramento State First Year Experience Regional Conference, “Partnerships and Practices” on August 26, 2008.

References:


CSUS Faculty Senate Resolution FS-05053/Ex http://www.csus.edu/acse/05-06_actions.htm


