Faculty Fellows

Survey Results

- Assesment of Students' Learning Gains of 21st Century Skills
- Program Evaluation

Suzanne Aurilio
September, 2009

Qualcomm Institute for Innovation and Educational Success
San Diego State University

Table of Contents

Faculty Fellows
Survey Results: Student Learning Gains of 21st Century Skills and Program Evaluation

Faculty Fellows Assessment of Student Learning Gains of 21st Century Skills

Faculty Fellows indicated that overall their students developed 21st century skills as expected or better as a result of their pICT or CDI (Course Design Institute) project. This was more or less consistent across Digital Literacy, Inventive Thinking, Effective Communication and High Productivity. Results also showed a surprising number of N/A responses (a skill was not incorporated into the project) suggesting two possibilities. The first is that some skills (e.g. Global Awareness) were not addressed by a majority of Fellows. The second is that Fellows' perceptions of what constituted a 21st century skill may have differed from those of the program team's.

Program Evaluation

The results of the program evaluation reiterate findings from formal and informal evaluations conducted over the life of the program. Personalized attention on a need-to-know basis trumps the kinds of services we provided such topical web seminars, and workshops. This feedback reiterates the program team's observation that a concierge model of providing support (on-demand, walk-in service) complements the boutique model (designing workshops on topics we chose).

Building a community of educational professionals is seen as a valuable asset. Resources are most often understood in terms of having access to individuals through personal consultations and professional learning communities , and the sense that there is a larger community to which one belongs.

Faculty Fellows Survey Results

Introduction

People, Information and Communication Technologies (pICT) is supported by San Diego State University's Qualcomm Institute for Innovation and Educational Success and housed in the Division of Undergraduate Studies. Our goal is to develop SDSU's undergraduates' 21st century skills, knowledge, and dispositions. We do that by designing programs and initiatives that develop our faculty's capacity to integrate principles of learning, digital know-how, and 21st century key competencies in undergraduate general education courses and across the undergraduate curriculum.

In 2007, the SDSU Course Design Institute (CDI) was established to ensure pICT's mission would become integrated into SDSU's commitment to student success through improved practice.

In spring 2009, we asked pICT and CDI Faculty Fellows to assess their students' learning gains of 21st Century Skills and to evaluate our program. (See Appendix A and http://pict.sdsu.edu/engauge21st.pdf for 21st century skills)

Study Participants
We invited 55 pICT and CDI Faculty Fellows from the 2005 to 2008 cohorts to complete the survey, which consisted of 58 items. Of those 58 items, 46 addressed their expectations of their students' learning gains as a result of their project. In the remaining 12 items, they evaluated the pICT/CDI program and provided demographic data.

Fellows from all four cohorts were represented: seven from 2005, six from 2006, four from 2007 and four from 2008. Eleven respondents were male, nine female, and two declined to state gender. As to race/ethnicity, 15 responded Caucasian, one Asian/Pacific Islander, and one declined to state.

The age range of respondents was diverse. Seven respondents, respectively, were between 35 and 44, and 55 and 64 years old. Five were between 45 and 54 years old, and three declined to state their age. As to their appointments, six were full Professors, eight were Associate Professors, two were Assistant Professors, five were adjunct faculty/lecturers, and one respondent was no longer employed at SDSU.

Assessing Student Learning Gains
The 46 items assessing student learning gains in 21st century skills were drawn from the Engauge 21st Century Skills (Appendix A), the same framework afterwhich our program goals were modeled. An example of an item and the likert scale responses read: *As a resulty of my pICT/CDI project my students use a variety of technology tools in effective ways to increase creative productivity.* Response choices were *much better than expected*, *better than expected*, *as*

expected, *worse than expected* and *much worse than expected*. A *not applicable* choice was provided for items that were not relevant to the respondent's project or discipline. Each literacy (e.g. visual literacy) was assigned 3 items and a mean score was calculated for each literacy.

Fellows were asked to base their responses on formal and informal measures related to their pICT/CDI intervention. These measures included students' work products, assignments, exams, and formative and summative assessments, some of which were pICT/CDI program deliverables. The survey introduction also included the following text: "We realize that for some of you, your pICT experience and project are behind you and you may not feel like you can make 'accurate' statements. This survey is designed to gather *your impressions*. Do the best you can!"

Student Learning Gains of 21st Century Skills

Digital Literacy

Digital literacy is comprised of technological literacy, visual literacy, information literacy, multicultural literacy and global awareness. The blue bars in figure 1 indicate the rating of *Better than or Much better than expected,* the red bars *As expected,* and the yellow *Worse or Much worse than expected*. The green bars indicate *Not applicable,* meaning that the respondent did not think that literacy was addressed in his or her project.

Almost all respondents reported that their students' technological literacy development met or exceeded their expectations. Slightly fewer, but still a majority, reported their students met or exceeded their expectations on developing their visual, information, and multicultural literacies.

A majority of projects appear to have not incorporated developing students' global awarness, while slightly fewer did not incorporate developing students' multicultural literacy.
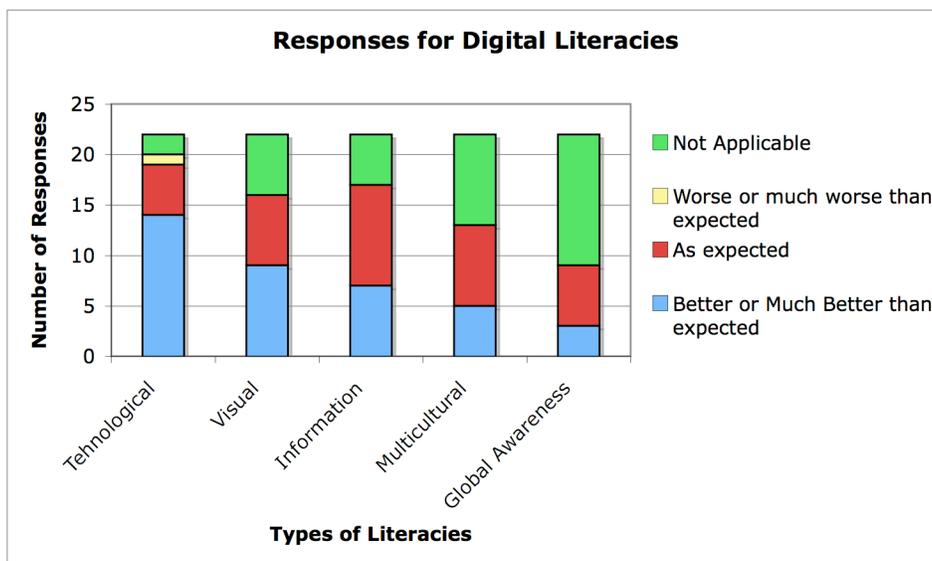

Figure 1 Responses for Digital Literacies

Inventive thinking

Items addressing Inventive Thinking included developing students' adaptability and abilities to manage complexity, self direction, curiosity, creativity and risk-taking, and higher order thinking and sound reasoning.

In comparison to the differences among ratings and relevance of digital literacies, figure 2 indicates that respondents' expectations were met or exceeded more consistently across inventive thinking skills. At the same time, in 3 of the 4 the inventive thinking literacies (adaptability, managing complexity; self-direction and curiosity, creativity and risk-taking) respondents rated a few students as not meeting their expectations.
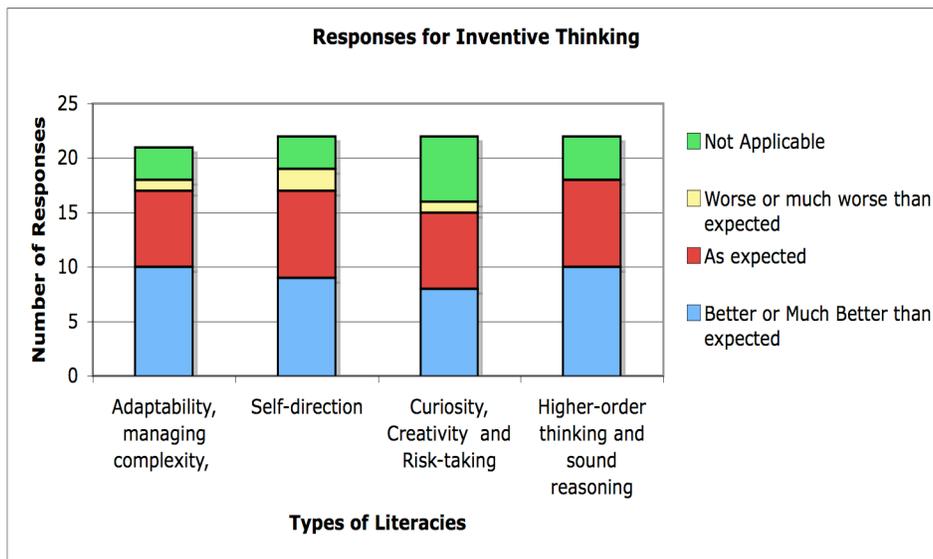

Figure 2 Responses for Inventive Thinking

Effective communication

Under the rubric, Effective Communication, Fellows responded to their students development in teaming and collaboration, interpersonal skills and interactive communication, and personal, social and civic responsibility. Similar to the ratings of Inventive Thinking, respondents provide a consistent picture across these literacies (Figure 3), with approximately two thirds indicating that their students performed as expected or better than expected and approximately one third saying that they did not address any of these literacies.
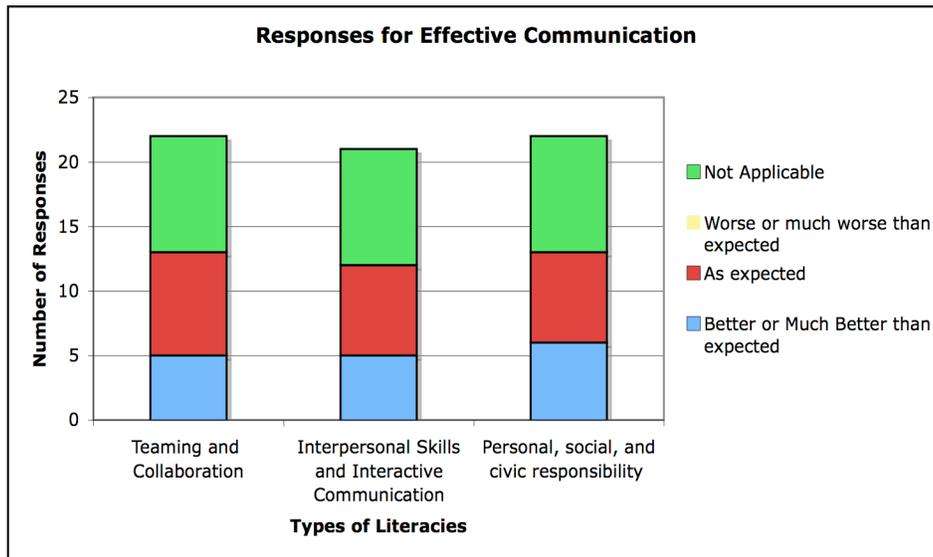
Responses for Effective Communication

Figure 3 Responses for Effective Communication

High Productivity

High productivity consists of prioritizing, planing and managing for results, effective use of real world tools and the ability to produce relevant high quality products.

For a great majority of respondents their students met or exceeded their expectations in prioritizing, planing and managing for results and effective use of real world tools. Only small percentages said they did not incorporate these literacies. A few respondents reported that students did not meet their expectations in prioritizing, planning and managing. For noticeably fewer respondents, their students met or exceeded their expectations for producing relevant, high quality products, while a greater number said they did not incorporate this literacy into their projects.
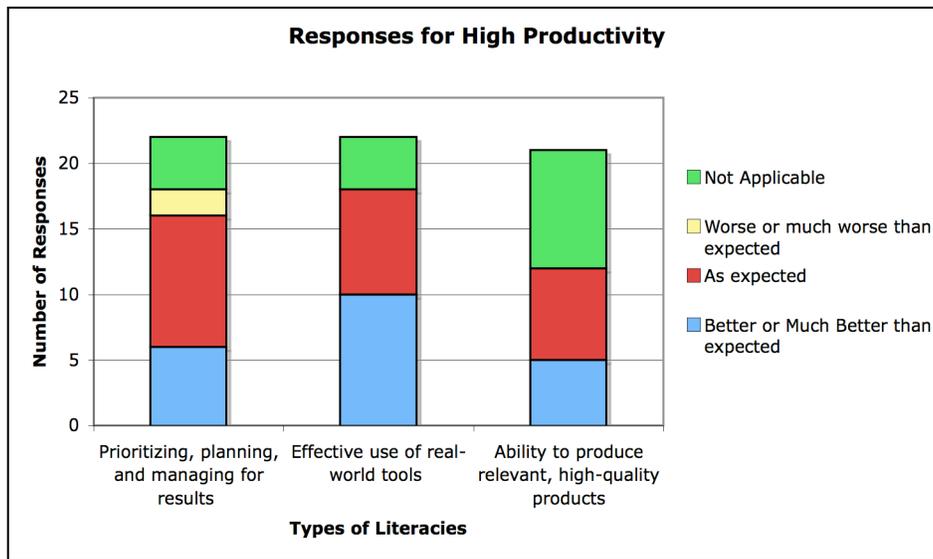
Responses for High Productivity

Figure 4 Responses for High Productivity

Discussion

The lower ratings on Visual Literacy may reflect the fact that some respondents teach very large courses, in which there is no opportunity for students to employ technology in these ways. The overall findings for Information Literacy suggest that Fellows focused more on technology and discipline content than on finding, evaluating, and using information effectively. The results for Inventive Thinking show a promising trend.

The most surprising aspect of these results is the frequency of the N/A response. Each cohort of Fellows had a slightly different level of exposure to the 21st century skills framework and this might in part explain these ratings. Some Fellows might not have perceived a skill or literacy in their project when we might have. For example, High Productivity and Effective Communication would seem to encompass more general skills students engage with in most courses.

Program Evaluation

Faculty Fellows overwhelmingly agreed that their participation in pICT and/or the CDI has been a good use of their time and that their experiences were likely to improve student learning and courses beyond their initial project.

The majority continue to be excited about the prospects of improving teaching and learning using technology, and three quarters regularly shared their ideas and experiences with colleagues who have not participated in the program. Over two thirds felt like they are part of a collegial community.

Regarding programmatic initiatives, three quarters told us that scheduling conflicts prevented them from attending as many program activities as they would have liked. Fellows prefer personalized, face to face support, whether it was one to one or in groups. Over three quarters rated consultations with faculty consultants as most likely to result in their continued efforts to improve teaching and learning, followed by professional learning communities, then refresher workshops and learning stories luncheons and finally OverLunches. Over three quarters told us that webinars were unlikely to result in their continued efforts.

The open-ended question, *What topics, issues or skills, would you like to address in the future* produced diverse responses, although taken together they reflect an awareness of the importance of pedagogical and instructional design over a focus on technologies. One commenter summarized his or her experience as follows:
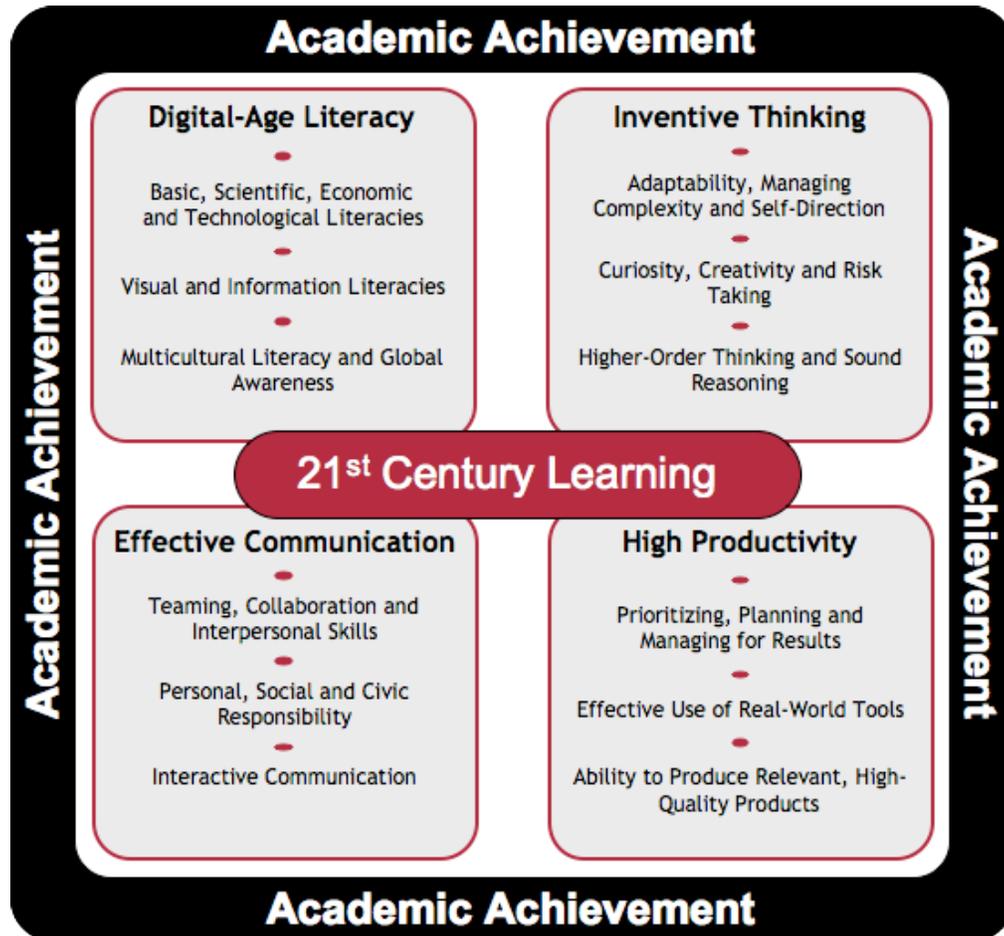
> *I'm comfortable trusting the expertise of the entire team from*
> *pICT, CDI, CTL, ITS, and so on to put topics, issues, and skills out*
> *there for our consideration. Each individual couldn't possibly*
> *cover all that ground, but with such a strong support team*
> *providing a foundation for us helps immensely. Then we are in a*
> *position to choose from many "best-practice" options and adapt*
> *them to our particular course needs. This is a remarkable program*
> *and I appreciate having all those resources made available to me.*

Discussion

pICT and CDI have evolved since its inception in 2005 and the results of the program evaluation are in line with formal and informal evaluations we have conducted over the life of the program. Personalized attention on a need-to-know basis trumps the kinds of nice-to-know services we provided in events such as broadcasted webinars.

The value of building a community of educational professionals is evidenced in the quoted comment. Resources are most often understood in terms of having access to individuals through personal consultations, professional learning communities and the sense that there is a larger community to which one belongs.

Appendix A 21st Century Skills

Academic Achievement

Digital-Age Literacy
- Basic, Scientific, Economic and Technological Literacies
- Visual and Information Literacies
- Multicultural Literacy and Global Awareness

Inventive Thinking
- Adaptability, Managing Complexity and Self-Direction
- Curiosity, Creativity and Risk Taking
- Higher-Order Thinking and Sound Reasoning

21st Century Learning

Effective Communication
- Teaming, Collaboration and Interpersonal Skills
- Personal, Social and Civic Responsibility
- Interactive Communication

High Productivity
- Prioritizing, Planning and Managing for Results
- Effective Use of Real-World Tools
- Ability to Produce Relevant, High-Quality Products

North Central Regional Education Laboratory and Metri Group. (2003). *enGuage 21st Century Skills: Literacy in the Digital Age*. Retrieved from http://www.ncrel.org/enguage.