Leadership & Technology Outcomes for Long Beach YMCA Youth Institute Alumni at the End of Year One

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Introduction

The YMCA of Greater Long Beach Youth Institute is a program that uses technology as an integral mechanism for promoting positive youth development and enhancing the academic success and career readiness of low-income, culturally-diverse high school students. Classes enter each summer with an intensive eight-week program. Upon graduation from the summer program, participants become "Youth Institute Alumni," who are then able to voluntarily participate in a wide range of year-round programs throughout their high school and, potentially, their college years. Involvement opportunities include, but are not limited to, digital art labs, homework assistance, academic advising, community service, equipment check-out, field trips, dance clubs, paid technology and mentoring assignments, community leadership positions and social work support.

Two of the goals of the program are: (a) To improve the technology knowledge and skills of participants by providing intensive, year-round enrichment experiences that fully integrate and emphasize state-of-the-art technology, and (b) To use youth development principles and project-based learning to develop leadership and decision-making skills. This report investigates the effects of the program on achieving these goals after one-year of program participation in two Youth Institute cohorts.

Methods

Data Collection

Program staff collected self-report data from all entering 2003 and 2004 YMCA Youth Institute participants on their first day of the program, and, from as many as possible, approximately one year later. Two surveys were completed. The first was the Leadership Skills Inventory (Karnes & Chauvin, 2000), a standardized leadership measure. The inventory measures nine areas of leadership skill. The instrument has been shown to have strong reliability and validity. The second instrument, The Long Beach YMCA Technology Skills Inventory, was

created by Dr. Jo Ann Regan of the California State University, Long Beach, Department of Social Work, specifically to evaluate this project. The Technology Inventory consists of two sections, one on frequency of technology use and one on technology competency.

Sample

Seventy-two students entered the YMCA Youth Institute in 2003 (N = 37) and 2004 (N = 35). Of these 72 entering participants, 42 (21 from each year) returned both the pre-test and post-test surveys, a response rate of 52%. For the purposes of these analyses, the two groups were combined to investigate the long-term effects of the program. Attrition analyses were conducted to determine if the participants included in the sample differed from those who did not have pre- and post-test data. There were no significant gender, ethnic, or grade differences between the two groups.

As shown in Table 1, the participants who were included in this study ranged from 12 to 17 years of age at the start of the program. The majority of youth were in the 13 to 15 year age range (84%). There were more males (59%) than females (41%). Latinos (38%) were the largest ethnic group, followed by Asian-American/Pacific Islanders (24%), African-Americans (21%), European-Americans (12%), and Multicultural (5%). Almost three-quarters (74%) of the sample were 8^{th} or 9^{th} graders when they began the program.

Table 1

Description of Study Participants
(N = 42)

	%	N
♦ Class Year		
2003	50%	21
2004	50%	21
♦ Age at Start of Program		
12	2%	1
13	31%	13
14	31%	13
15	22%	9
16	12%	5
17	2%	1
♦ Gender		
Female	41%	17
Male	59%	25
♦ Ethnicity		
Latino	38%	16
Asian American/Pacific Islander	24%	10
African-American	21%	9
European-American	12%	5
Bi/Multicultural	5%	2
♦ Grade		
8^{th}	48%	20
9^{th}	26%	11
10^{th}	17%	7
11^{th}	9%	4

Analysis

Leadership Skills

Nine types of leadership skills were measured including fundamentals of leadership (α = .86), written communication (α = .89), speech communication (α =.86), character-building (α = .88), decision-making (α = .84), group dynamics (α = .84), problem-solving (α = .85), personal skills (α = .91), and planning (α = .94). Participants rated themselves on engaging in each behavior on a scale ranging from 0 “Almost Never” to 3 “Almost Always.” Higher scores indicated better self-perceived skills. Changes in skills from program entry until the end of year one were investigated using paired t-tests.

After investigating the changes on each of the leaderships scales, a second set of analysis, using correlations was completed, to determine whether levels of program participation was related to self-reported changes in leadership skills. The number of times alumni participated in each of the program components was added together in each area (digital arts, Youth Council, community service at elementary schools, general community service and classes, academic advising, field trips, etc.). A total participation score, the sum of the totals in each area, was also created.

Results

As shown in Table 2, study participants reported significant improvements on Fundamentals of Leadership, t (41) = 4.02, $p < .05$, Written Communication, t (41) = 3.68, $p < .05$, Speech Communication Skills, t (41) = 4.71, $p < .05$, Group Dynamic Skills, t (41) = 2.87, $p < .05$, Decision-Making Skills, t (41) = 2.74, $p < .05$, Problem-Solving Skills, t (41) = 4.01, $p < .05$, and Planning Skills, t (40) = 3.68, $p < .05$ after their first year of program participation. They also reported improvements in the areas of character building t (41) = 1.92, $p < .10$ and personal t (40) = 1.85, $p < .10$ that approached significance. Prior to attending the program, these teens rated themselves lowest on speech communication and problem-solving and highest on character building and personal skills. The greatest gains were found in fundamentals of leadership and problem-solving.

Table 2
Participant Report of Changes in Leadership Skills

Skills	Pre-Test			Post-Test		Difference
	Mean	SD	N	Mean	SD	
Fundamentals of Leadership	2.23	.58	42	2.59	.38	.36**
Written Communication	2.23	.61	42	2.56	.37	.33**
Speech Communication	2.14	.49	42	2.46	.37	.32**
Character Building	2.55	.35	42	2.66	.32	.11*
Group Dynamics	2.32	.39	42	2.53	.38	.21**
Decision-Making	2.39	.42	42	2.57	.40	.18**
Problem-Solving	2.14	.57	42	2.49	.46	.35**
Personal	2.45	.40	41	2.58	.37	.13*
Planning	2.21	.54	41	2.50	.48	.29**

**p<.05
*Approaching significance, p<.10

Types of Program Involvement

As shown Table 3, the types of Youth Institute activities varied slightly between the 2003 and 2004 academic years (September – May). The frequency in which each participant was involved in each activity also varied, sometimes substantially. Thus, it was important to determine whether the leadership skill improvements found were influenced by levels of participation.

Table 3
Extent of Involvement on Program Activities

Activity	Class of 2003				Class of 2004			
	N	Mean	SD	Range	N	Mean	SD	Range
Digital Arts Lab	21	93.48	46.59	5-160	21	70.81	34.19	19-136
Elementary School Community Service Projects	15	18.60	9.16	6-35	19	25	15.63	3-49
Equipment Checkout	19	10.89	8.77	1-39	18	9.17	8.15	1-33
Other Community Service	21	7.09	2.05	2-10	21	5.00	1.18	3-8
Academic Advising	20	6.20	3.66	1-13	19	3.84	3.08	1-12
Youth Council	13	1.61	.87	1-3	18	3.06	1.66	1-6
Field Trips	19	1.26	.45	1-2	17	1.59	.51	1-2
Social Work Support	6	4.17	1.83	2-6	-	-	-	-
Hip Hopology	6	16.67	24.34	1-51	-	-	-	-
Total	**21**	**137.71**	**62.28**	**12-234**	**21**	**113.67**	**48.00**	**41-215**

Relationships between Involvement and Changes in Leadership

Total extent of involvement was not significantly related to changes in any of the leadership skills. However, in the combined group, the amount of academic advising the participant received was somewhat positively related to growth in fundamentals of leadership (r^2 = .27, p < .10), written communication (r^2 = .27, p < .10), problem-solving (r^2 = .31, p < .10), personal skills (r^2 = .31, p < .10), and planning skills (r^2 = .32, p < .10). Thus, higher levels of participation in academic advising were related to greater improvement in all of these leadership skill areas. Community service at the elementary school sites (r^2 = .46, p < .05) was significantly positively related to growth in fundamentals of leadership and somewhat positively related to growth in written (r^2 = .29, p < .10) and speech (r^2 = .31, p < .10) communication. Levels of participation in other community service (Haunted House, Digital Arts camp, CORAL Picnic) were also somewhat positively related to growth in written (r^2 = .30, p < .10) and speech (r^2 = .29, p < .10) communication.

Since the extent of involvement measures created here came from different years and involvement opportunities varied somewhat, the analyses on the relationship between extent of involvement were also ran separately for the 2003 and 2004 classes. Among the 2003 study participants, levels of involvement in academic advising were significantly positively related to growth in the area of planning (r^2 = .50, p < .05) and somewhat positively related to growth in the areas of personal skills (r^2 = .43, p < .10) and decision-making (r^2 = .38, p < .10). Amount of participation on the 1st District Youth Council was significantly positively related to growth in decision-making (r^2 = .59, p < .05). Extent of participation in field trips was also significantly related to growth in the areas of speech communication (r^2 = .54, p < .05), character-building (r^2 = .49, p < .05), decision-making (r^2 = .47, p < .05), and group dynamics (r^2 = .48, p < .05) and somewhat related to growth in writing communication (r^2 = .39, p < .10). Hip Hop dance was significantly positively related to growth in fundamentals of leadership (r^2 = .94, p < .05) and character-building (r^2 = .81, p < .05). Involvement in other community service was somewhat positively related to growth in written communication (r^2 = .39, p < .10). Perhaps, not surprisingly, more frequent use of social work support services was significantly negatively related to growth in fundamentals of leadership (r^2 = -.82, p < .05) and somewhat negatively related to growth in problem-solving (r^2 = -.79, p < .05).

Among 2004 study participants, extent of academic advising was significantly positively related to growth in written communication (r^2 = .56, p < .05) and somewhat positively related to growth in speech communication (r^2 = .42, p < .10). Amount of participation on the 1st District Youth Council was significantly positively related to growth in speech communication (r^2 = .56, p < .05). Extent of participation in community service with elementary students was significantly positively related to growth in fundamentals of leadership (r^2 = .56, p < .05) and somewhat positively related to speech communication (r^2 = .37, p < .10). Involvement in other community services was significantly positively related to growth in personal skills (r^2 = .58,

$p < .05$) and somewhat positively related to planning skills ($r^2 = .42$, $p < .10$) and speech communication ($r^2 = .37$, $p < .10$).

Technology Use

Technology use was measured by participants' self-report of their frequency of use of 12 types of technology. Participants rated themselves on a scale ranging from 1 "Never" to 4 "Daily." Higher scores indicated greater frequency of use. Prior to entering the program, participants rated their frequency of use highest on using computers at home and school, accessing the Internet and using computers to complete schoolwork. Their least frequent use was in the areas of graphic design, Internet purchasing and creating web pages.

As shown in Table 4, study participants reported significantly more frequent use of e-mail, t (40) = 4.57, $p < .05$, access of the Internet, t (40) = 2.15, $p < .05$, creation of web pages, t (37) = 4.93, $p < .05$, creation of graphic designs with computer software and code applications, t (40) = 7.33, $p < .05$, use of data processing software applications for databases or spreadsheets, t (40) = 4.28, $p < .05$, use of digital video equipment, t (40) = 4.66, $p < .05$, participation in Internet chat rooms/discussion boards, t (40) = 3.39, $p < .05$, and use of the Internet to buy things, t (39) = 3.75, $p < .05$ at the end of year one. The greatest gains in frequency of technology use were found on creating graphic designs, creating web pages and using data processing software for databases or spreadsheets.

Table 4

Participant Report of Changes in Technology Use

	Pre-Summer			Post-Summer		Difference
	Mean	SD	N	Mean	SD	
Use the computer at home/school	3.46	.90	41	3.71	.56	.24
Send e-mail	2.29	1.05	41	3.15	1.01	.86**
Access the Internet	3.32	.99	41	3.68	.79	.36**
Create web pages	1.37	.88	38	2.39	1.00	1.02**
Create graphic designs with computer software applications	1.29	.81	41	2.61	.92	1.32**
Use word processing software applications to write text	2.88	.87	41	3.12	.93	.24
Use data processing software for databases or spreadsheets	1.78	.91	41	2.71	1.19	.93**
Use digital video equipment	1.98	.99	41	2.83	.83	.85**
Participate in Internet chat rooms/listservs	1.88	1.10	41	2.63	1.18	.75**
Play computer games	2.73	1.05	41	2.44	1.03	-.29
Buy things on the Internet	1.40	.81	40	2.02	1.16	.62**
Use the computer to complete school assignments	3.10	.89	41	3.19	.84	.09

**p<.05

Technology Competence

Technology competence was measured by participants' self-report of knowledge in nine different areas. Participants rated themselves on a scale ranging from 1 "No knowledge" to 4 "Excellent knowledge." Prior to program participation, teens reported their highest levels of

knowledge in the area of working collaboratively with others to use technology to compile, synthesize, produce and disseminate information and use of input and output devices to successfully operate computers, VCRs, audiotapes, etc. Their lowest levels of knowledge were in the areas of the use; (a) a variety of media and formats to communicate information and ideas effectively, (b) technology tools for managing and communicating personal/professional information, and (c) technology in the development of strategies for solving problems in the world.

As shown in Table 5, study participants reported significant improvements in their competencies with: (a) a variety of media and technology resources to create knowledge products for audiences inside and outside the classroom, t (39) = 4.97, $p < .05$; (b) the creation of multimedia products with support from teachers, family members or student partners, t (39) = 3.39, $p < .05$; (c) the use of technology tools to locate, evaluate, and collect information from a variety of sources, t (39) = 3.46, $p < .05$; (d) the use of technology tools to process data and report results, t (39) = 4.21, $p < .05$; (e) the use of technology in the development of strategies for solving problems in the world, t (37) = 5.21, $p < .05$; (f) the use of technology tools for managing and communicating personal/professional information, t (39) = 5.56, $p < .05$; and (g) the use of a variety of media and formats to communicate information and ideas effectively to multiple audiences, t (39) = 5.03, $p < .05$ at the end of year one. They also reported improvement which approached significance in the use of input and output devices t (39) = 1.82, $p < .05$.

The greatest knowledge gains were found on the use of technology for managing and communicating information, the use of a variety of media and formats to communicate information and ideas effectively using technology resources to create knowledge products for audiences and, creating multimedia products with teacher, family or student partners.

Table 5
Participant Report of Changes in Technology Competencies

	Pre-Test			Post-Test		
	Mean	SD	N	Mean	SD	Difference
Use input and output devices to successfully operate computers, VCR's, audiotapes, etc.	3.23	.77	40	3.52	.88	.29*
Use a variety of media and technology resources to create knowledge products for audiences	2.53	.90	40	3.40	.78	.87**
Work collaboratively with others to use technology to compile, synthesize, produce, and disseminate information	3.25	.71	40	3.50	.78	.25
Create multimedia products with support from teachers, family members, or student partners.	2.63	1.05	40	3.32	.92	.69**
Use technology tools to locate, evaluate, and collect information from a variety of sources.	2.95	.81	40	3.47	.82	.52**
Use technology tools to process data and report results.	2.68	.92	40	3.42	.87	.74**
Use technology in the development of strategies for solving problems in the world.	2.37	.79	38	3.16	.85	.79**
Use technology tools for managing and communicating personal/professional information.	2.15	.89	40	3.17	.87	1.02**
Use a variety of media and formats to communicate information and ideas effectively.	2.25	.90	40	3.17	.87	.92**

**p< .05
*Approaching significance, p<.10

Relationships between Involvement and Changes in Technology Use and Competencies

Additional analyses were run to determine whether level of involvement was related to the use and competence items that evidenced significant improvement. Only components that were related to technology and its use were included in these analyses.

Total attendance to all classes was somewhat positively related to the use of digital video equipment (r^2 = .29, p < .10), and the use of technology tools to process data and report results (r^2 = .27, p < .10). Extent of digital lab use was significantly positively related to increased use

of digital video equipment (r^2 = .33, p < .05) and somewhat positively related to increased competency in the use of technology tools to process data and report results (r^2 = .28, p < .10). Extent of academic advising was significantly positively related to increased use of graphic designs (r^2 = .50, p < .05) and data processing software (r^2 = .41, p < .05). Level of academic advising was also significantly positively related to increased competency in the use of technology tools to process data and report results (r^2 = .30, p < .05) and use of technology in the development of strategies for solving problems in the world (r^2 = .36, p < .05) and somewhat positively related to the use of technology tools for managing and communicating personal/professional information (r^2 = .28, p < .10). Number of equipment checkouts was significantly positively related to increases in creating web pages (r^2 = .35, p < .05) and use of data processing software applications (r^2 = .42, p < .05). Equipment checkouts was also significantly positively related to increased competency in the use of technology tools to locate, evaluate and collect information (r^2 = .36, p < .05) and somewhat positively related to increased competency in the use of technology tools to process data and report results (r^2 = .31, p < .10), the use of technology tools in the development of strategies for solving problems in the world (r^2 = .31, p < .10), and the use of technology tools for managing and communicating personal/professional information (r^2 = .31, p < .10). Involvement in other community services was somewhat positively related to an increase in the use of digital video equipment (r^2 = .28, p < .10), the use of input devices to successfully operate computers, VCRs, audiotapes, and other technologies (r^2 = .28, p < .10), the creation of multimedia products with support from teachers, family members, or student partners (r^2 = .30, p < .10), the use of technology tools to locate, evaluate, and collect information from a variety of sources (r^2 = .29, p < .10), and the use of technology tools to process data and report results (r^2 = .28, p < .10).

Conclusions

Prior evaluations on the effects of the YMCA Youth Institute of leadership and technology were taken at the beginning and end of the intensive summer program when youth were involved in technology and leadership development seven hours a day, five days a week. While those outcomes have always been extremely positive, they looked only at program effects at the immediate end of a carefully designed and intensive program when youth had relatively little contact with their "typical" school and social lives. This study builds on prior studies in that it investigated the long-term effects of the program, when youth are also involved in school and other activities.

Leadership

At the end of one year of Youth Institute involvement, these participants evidenced significant skill gains in the areas of fundamentals of leadership, written communication, speech communication, group dynamics, decision-making, problem-solving, and planning. In addition, they reported some improvement in the areas of character building and personal skills. While these results mirror the findings in earlier evaluations of the effects of the intensive summer program, they suggest that the leadership skills gained are maintained even as youth participate less intensively in the program. The results may also provide some support for the notion that alumni practice the skills they learn outside of the intensive program structure, since they continue to report higher skills as they return to school and community settings. This is encouraging given that these skills should prove useful to youth in the high school, college, and work arenas.

These analyses also suggest that the extent of alumni involvement was frequently related to higher skills. Thus, it appears that more is better. Leadership skills were particularly related to the components of academic advising, community service at elementary schools, and, to a lesser extent, other community services. Within one cohort, field trips were also related to

higher skills in a number of areas. These findings suggest that a variety of experiences, both hands-on and mentoring, may hone their leadership skills. Given the strong relationship between academic advising and leadership development in many areas, it may be beneficial to strengthen and extend this component to all alumni. The design of the community service projects, both at the elementary school level and in the larger community, also appears to help develop these valuable skills. Thus, community service is a component that is important to maintain and further enhance. While it is not readily apparent why field trips would be so strongly related to multiple leadership skills in one year, program staff might want to review how trips differed each year to aid in future field trip planning.

Technology

Participants reported significantly more frequent use of eight (67%) of the 12 technology items and significantly better competence on seven (78%) of the nine technology competencies. at the end of their first year. The areas where there were not significant use gains were primarily in the lower skill areas (using computer at home/school, use of word processing applications, use of computer to complete homework, and computer games) and perhaps less likely to be influenced by the Youth Institute, which primarily focuses on higher level technology application. The results suggest that alumni continued to use and master a wide range of sophisticated technology even though they did not have mandated Youth Institute project assignments like they did during the summer program. It is likely that these youth were using the technology to enhance their school work and/or to advance personal or work projects. It is encouraging that these youth appear to have generalized and maintained their use of technology skills outside of the parameters of the Youth Institute summer program.

The significant and approaching significant relationships found between involvement and technology use and competence also underscore the importance of keeping youth involved and invested in the program. More time in the digital arts lab and more frequent use of technology

equipment were related to higher use and greater competency in some areas. The practice of allowing youth to "check-out" equipment for their school and personal use is a beneficial practice that should be continued. Academic advising and community service, again, seemed to have a positive influence even in the areas of technology use and competence. Community service might be particularly valuable in maintaining competence as many of the projects involved teaching technology skills in the community which may reinforce competence.

Overall, these findings are quite positive and suggest that the YMCA Youth Institute is helping youth to develop long-term gains in both leadership and technology skills. It is encouraging that most of the improvements seen after the intensive summer program still remained a year later, even though many youth were less actively involved in the program. The youth development principals used by the program to keep participants voluntarily involved seem to be particularly critical given the relationships found between levels of involvement and the skill improvements found here.