Overlooking the Obvious: Content-Based Skill-Building in After-School Programs

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A recent review of the research on after-school programs and their potential to impact children’s development indicates that quality programs seek to build competencies in youth participants (Mahoney, Parente, & Zigler, 2010). Understandably, current research largely addresses competencies in broad developmental terms without delving into the content specific skill-building goals of programs. For example, The Study of Promising After School Programs (Vandell et al., 2006) demonstrates that participation in high quality programs is associated with improved academic and behavioral outcomes for early teens, but little is known about the competencies adolescents acquired from participating in the observed enrichment activities (Vandell et al., 2004).

Over the past few years the definition of program quality has shifted to focus on quality at the point-of-service, thus increasing the need to understand the potential benefits of engaging youth in content-rich program offerings. Content-based skills are increased knowledge about a topic and/or the ability to accomplish tasks that are inherent to the content area. Consider a program offering about camping. Youth could learn which foliage was edible and they could also learn and practice how to build a tent. Both are examples of content-related skill-building that by themselves would not be considered a positive youth development outcome such as increased school engagement. Yet, teens are learning. Leaving content-based skill-building out of research and policy discussions yields an incomplete picture of the ability of youth programs to promote growth and development in adolescents.

Further, there is evidence to suggest that paramount to youths’ decisions to remain active in programs is opportunities to build competencies. Chaskin and Baker (2006) interviewed nearly 100 adolescents about their reasons for participating in organized activities and found that teens ranked opportunities to learn new skills as the most important program characteristic. In interviews with ethnic minority teens, Borden, Perkins, Villarruel, and Stone (2005) also found that the promise of learning new skills was an attractive program feature. The importance that adolescents place on skill-building is noteworthy because it may help keep youth involved in programs at a time when their attendance has traditionally declined (Herrera & Arbreton, 2003). In the current study, we examine content-related skill-building in youth programs with the intent of bringing renewed attention to this contribution to adolescent development. Data from a STEM focused after-school program for adolescents is used to examine the significance of content-based skill-building as an outcome of intentional learning opportunities and explore which youth and program factors are associated with gains in content skills for adolescents. In this study, most after-school instructors focused on broadly defined developmental outcomes for teens, despite evidence that many students and staff have instructional goals that align with the STEM curriculum of their program. Nonetheless, youth reported building content skills and were more likely to do so if they attended a high poverty school and had an affinity for the topic of the program offering. These findings indicate that the omission of content-related skill acquisition as a positive outcome for adolescents is replicated at the program level but, recognized or not, skill development is contributing to teen’s development.

**The STEM Lab**

Data for this study comes from the Science, Technology, Engineering, and Math (STEM) Lab, a community-based after-school program for adolescents. The STEM Lab opened its doors six years ago to serve adolescents in a suburb of Los Angeles. The program goals are summarized in the mission statement below.

*The mission of the STEM Lab is to provide an interactive asset-rich learning environment that will provide individual aptitude in reading, math, science, and technology in order to assist youth from diverse backgrounds to develop personal accountability, independence, and resilience leading to a greater knowledge of career options and an increase in college enrollment.*

To this end, the STEM lab adopts an explicit positive youth development approach, using the Search Institute’s 40 Developmental Assets framework (Benson, 2003).

This study focuses on the STEM Lab’s flagship after-school program where middle and high school students participate in a variety of STEM and enrichment program activities such as video production, engineering, and service learning. Each year the STEM Lab serves approximately 1,000 adolescents in their after-school program. Participating teens are predominantly ethnic minorities (87%); of which the majority are Latino (52%) youth. Adolescents come from more than 50 middle and high schools demonstrating the success of the STEM Lab’s recruitment efforts.

The after-school program is structured to simulate the college-going experience. Youth are engaged in two hour “courses” of their choosing from 4 – 6 pm. Much like a college, courses occur biweekly over a seven-week quarter. The benefit of this schedule is that it can accommodate teens’ busy lives and provides enough flexibility for youth to explore multiple interests and/or delve deeply into one topic. Group tutoring, district textbooks, and access to computers with internet are available to youth alongside the STEM and enrichment classes. Academic support typically occurs before youth begin their courses but teens have the option to stay in this program area for as long as they find it useful. Each STEM and enrichment course has its own project-based curriculum. The curriculum is sequenced so that, over the course of the quarter, teens acquire the skills needed to develop a final product. The curriculum also helps teens explore their career options by introducing youth to careers that are related to the topic of their enrichment courses. At the end of every seven-week quarter, youth are encouraged to share their final products with family and community members at an open-house.

The discrete courses offered at the STEM Lab with tailored curriculum facilitate the study of content-related skill development. In addition, the STEM Lab has a track record of implementing high quality activities and promoting positive youth outcomes. Previous evaluations1 found that while at the program youth developed positive social relationships with staff and peers and were engaged in interactive and participatory learning. High attending youth reported improved work habits, school performance, and science efficacy. Teens also reported that the program helped them avoid problem behaviors and inspired them to think about their plans for the future. The data used in this study were gathered as part of the ongoing evaluation and program improvement efforts of the STEM Lab.

Our investigation of the content-based skill-building in the context of the STEM Lab was guided by two questions. First, we asked what do after-school instructors say youth are gaining from participating in a STEM focused program? We were particularly interested in ascertaining if, and how, the outcomes identified by staff aligned with the project-based STEM and enrichment curriculum. Second, we sought to learn if youth reported learning STEM related content. If so, we wanted to explore which youth and program factors were associated with content-specific skills. We speculated that attendance would be related to content-based skill-building because of the association between attendance and youth outcomes in the out-of-school time literature (e.g. Bonhert, Fredricks, & Randall, 2010). Our results contribute to an understanding of how content-skills can be overlooked within a program and provide an example of how one program assessed content-related skill-building in their program. The findings also point to factors that may contribute to content gains for youth.

**Data and Methods**

 The primary sources of data are interviews with after-school instructors and surveys from teen program participants. Interviews with after-school program staff are used to test whether content-related skills are recognized as a contribution to youth outcomes at the program level. Interviews with program staff were used because staff are uniquely positioned to report on youth outcomes given that they have the most contact with youth in the program context and are the primary delivers of the STEM and enrichment curriculum. Interviews were conducted during the first two years of the program when the program design was still being refined. All after-school program instructors were interviewed for approximately one hour about their background, program implementation, youth attendance and outcomes, and overall program improvements. Each of the nine after-school instructors had been working at the STEM Lab for a minimum of one year and came to the program as a college graduate or a current college student. Notably, two of the after-school instructors had a teaching credential and another was finishing up a credential program at the time of the interview. Our analysis focuses on after-school instructors’ responses to questions about youth outcomes and the STEM and enrichment curriculum.

 Each interview was recorded and transcribed prior to analysis. Interviews were analyzed using open coding which allows the researcher to identify themes present in the data (Glaser & Strauss, 1967). As a strategic approach to open coding the interview text was chunked into two topical areas: youth outcomes and the curriculum. We then looked across interviews to understand the diversity of instructor’s responses and codes were developed to capture the essence of staffs’ perspectives. Finally, codes were grouped to identify conceptual themes present in the interview data.

**Content-Based Skill-building and Related Factors**

 Interview data is complimented by youth surveys that were collected via a management information system. Surveys assessed youth’s interest in the course topic, the reasons for enrollment, content related skill-building, the strengths and weaknesses of the course and the overall program. During survey development the evaluator encouraged instructors to develop learning goals for youth that aligned with the STEM curriculum. It is important to note that staff were interviewed at least a year prior to survey development, therefore, findings from interview data represent perspectives that were not biased by the process of developing content-related learning goals for youth. Learning goals were described to staff as statements that articulate the skills and/or knowledge that they would like youth to gain in their course. Program staff were given the following guidelines to support them as they identified their learning goals:

* Learning goals should be specific to the curriculum used in your course
* Use language that is accessible and familiar to adolescents
* Avoid combining two or more skills into one learning goal because it will be difficult to determine improvements for each skill

These were guidelines rather than firm rules. Through this process after-school instructors were empowered to think of themselves as the experts on the curriculum, with the power to grant exceptions where they were warranted. For example, the evaluation team was skeptical of some of the terminology staff chose to include in learning goal statements, but staff were adamant that by the end of the course adolescents would be familiar with the course jargon. An example of a final learning goal statement for an Aerospace course is: “ I can use Newton’s Laws of Motion to explain how a rocket achieves flight.”

Youth rated learning goal statements using a four-point scale from "not at all true" to "really true”. An average of teens’ reports of content-specific skill-building was calculated for each course. Four additional learning goals, named Universal Goals, were developed by researchers in concert with the STEM Lab’s administration to reflect the mission of the program. The Universal Goals are: 1) Youth will learn to work in groups; 2) Youth will learn about careers; 3) Youth will understand the assets they have and; 4) Youth will learn new technology. Adolescents were asked to evaluate the Universal Goals alongside their assessments of the learning goal statements. The purpose was to examine how well the mission of the program was being implemented within each course. The average of the content skills and the scores of each of the Universal Goals were combined into a scale to measure the extent to which youth were developing competencies in the STEM Lab. The skill scale had a Cronbach’s alpha of .67, a measure of how well the individual scale items fit together. Generally, an alpha of .70 is considered adequate but other exploratory studies have had success with scales that do not meet this guideline (e.g. Smith, Peck, Denault, Blazevski, Akiva, 2010).

Data on factors thought to be associated with content-specific skill-development were also gathered using youth surveys and the management information system. Demographic data were collected during the program enrollment process and attendance data were collected using electronic scanners where youth swipe membership cards with a unique identifier. The unique identifier is used to match student attendance data with their survey responses and demographic data. The relevant demographic data for this study are adolescents’ grade, school poverty level, and race. Attendance was measured as the number of days youth attended their chosen course. It was thought the youths’ reasons for enrollment may be associated with their gains in content knowledge. On youth surveys teens were asked to report the reasons that they chose to enroll in their class. Enrollment reasons included interest in the topic, friends, the instructor, the first choice course was full, and for repeat participants a desire to learn more about the topic or finish a previously started project. Surveys also included three questions that gauged teens’ interests in the course topic. Youth were asked how interested they were in the specific course topic (e.g. robotics), the broad subject in which the course could be categorized (e.g. technology) and if youth would consider taking another course on the same topic. Youth indicated their interest on a 4-point scale from “Not at all interested” to “Very Interested”. An interest scale with a Crohnbach’s alpha of .67 was developed by combining scores from the three interest questions. Multiple regression is used to explore which of these factors are associated with skill-building at the STEM Lab as measured by youth’s self-reported content gains.

**Youth Outcomes Identified by Instructors**

When asked to describe the key program outcomes for teen participants, after-school instructors at the STEM Lab identified a range of positive youth development outcomes such as improved self-confidence and learning to collaborate with peers. The essence of program goals was summed up by one program staff *“But even more than being successful in school, we want them to just be successful people. So I guess it's a lot of the asset building is where that comes in.”* The outcomes identified by program staff could be categorized into the Search Institute’s internal and external developmental assets. After-school instructors stated that youth participants had access to supportive staff, were provided an emotionally and physically safe environment, and avoided negative influences by having a positive place to hang out. These outcomes align with the external assets of support, empowerment, and constructive use of time. As far as the internal assets, after-school instructors saw youth increasing in their self-confidence, developing relationships with peers while also learning to collaborate in teams, and examining their options for the future. These youth outcomes can be characterized as the internal assets of positive values, social competencies, and positive identity. Quotes from program staff that exemplify the external and internal assets are presented in Table 1. The broad asset category is listed in bold text and the specific assets the staff identified are listed next. To a lesser extent staff thought teens were provided access to resources and opportunities that they would not have if they did not attend the program. Staff highlighted access to technology and scholarships as being particularly useful for adolescents.

In contrast, content-based outcomes were not mentioned in response to interview questions about program outcomes. Instead content-related outcomes were raised when after-school instructors were asked about the STEM and enrichment curriculum, but not for all program staff. Only instructors who engaged with the curriculum through mentored or unassisted curriculum development identified content-related outcomes. While describing the curriculum to evaluators, Rhonda communicates that youth are learning content skills and provided an example of how youth present what they learned to their families,

*They [youth] would take notes about everything they’ve learned through that day and then in the end they would make a PowerPoint presentation and they would present that presentation to their family when they got here. We would have everything out. They, for example, made a DNA molecule then that DNA molecule would be put together right next to their laptop. So if their family came in, they could turn on the laptop and show them exactly what it is all about, this is what I made*.

Rhonda makes it clear that throughout the course teens were documenting what they learned about the content and then used that to create a product that they could show to their families. Rhonda did not develop the DNA curriculum the student used in their final presentation, however, she was in the process of developing a curriculum about marine science. The instructors that talked about content-related outcomes either noted that youth were becoming more familiar with the topic of the course or that adolescents had developed a skill(s) that was valuable in the context of the course content. One staff mentioned that youth learned a lot from exposure to concepts like rocket science and astronomy and could explain these concepts later. Another instructor reported that teens had learned how to use biotechnology equipment properly.

 Figure 1 depicts the contextual relationship between curricular discussions and content-related outcomes. That is, interview questions about curriculum lead to the identification of content-based outcomes including expanding content knowledge or building competency in a content-related skill but these outcomes were not brought up in responses to interview questions about program outcomes. That staff did not make reference to content-related outcomes when asked about program outcomes suggests that these gains for youth were overshadowed by broader developmental goals, even for the people responsible for implementing the STEM and enrichment curriculum. Why were content-related outcomes discussed only in the context of the curriculum? One reason could be that after-school instructors did not have instructional goals for youth that were related to the topic of their course. It was quite possible that their focus was on promoting broader developmental outcomes. This may be because these instructors work in a program whose mission states that youth should have an “asset-rich environment” in pursuit of personal success. Therefore, the second round of qualitative analysis focused on discovering the instructional goals that staff had for youth.

 We found that after-school instructors had goals about youth development that encompassed the developmental assets as well as goals about the content of the course (shown in Figure 1). All but one instructor had clear developmental goals concerning the academic, social, and personal development of teen participants. Content goals were just as prevalent but more nuanced. Some staff had a very specific idea of what they wanted youth to learn. Carl, a credentialed science teacher said,

*So that’s kind of how universal science is like. It is covering chemistry, physics, biology, ecology, genetics, um, human physiology, which is this new part I just added to it. So its just kind of a broad look at science introducing some key concepts that you [teens] are going to see again and again so you get this repetition already to get the basics behind so you can go into class and say I’ve already cover this about genetics and I feel comfortable with it and I’m okay with it.*

Others showed evidence of content-related goals but without being specific. Javier, a technology instructor, told interviewers,

*I think that I've now learned enough about video production and all that fun stuff that I now feel confident in teaching my students what I would like them to know. I had to learn all that stuff on my own. I had to research it; I had to read books.*

Clearly, Javier had goals for teens’ learning. Some staff were concerned about the ways in which adolescents were engaging with the curriculum that suggested that they had a desire for youth to build content-related competencies. While discussing how time constraints impacted the delivery of the curriculum, Nicole said,

*I try to get them to do one [curriculum] session per class period because if they go through they’ll be done with their own session, half way through the session. I don’t think they are getting anything out of that. The last time I taught I did try to incorporate a final project or have some students that I thought were advanced do something advance instead of a PowerPoint. My genetics lab, instead of making a PowerPoint, they went down to the clubhouse and created a video about how to make a DNA strand. That would be something tangible.*

Nicole doesn’t explicitly state a content-related goal, but her worry that youth aren’t learning the content is evident. In fact, this worry led her to encourage youth to go beyond the PowerPoint as their final project.

 Considering that content and developmental goals appeared frequently in staff interviews it is unlikely that a difference in the types of instructional goals explains why content-related outcomes only arose from questions about the curriculum. Because the after-school instructors who designed curriculum were the only ones that cited content-related goals and outcomes, it may be this process that links content-related goals and outcomes for STEM Lab instructors. The dashed arrow in Figure 1 labeled “Curriculum Development” represents this relationship. Perhaps during curriculum development instructors are required to practice being intentional and as a result understand that content-based outcomes should follow from youths’ engagement with the curriculum. Ideally, all staff would recognize that content-based skill-building contributes to youth development and that over time these skills may support broader developmental goals.

The synergy between the developmental goals and developmental outcomes is shown in Figure 1 with a solid black arrow. The developmental goals and outcomes identified by staff mirrored the 40 developmental assets, the positive youth development approach adopted by the STEM Lab. Therefore, the solid arrow is labeled “Mission” to indicate that the organizational mission with its emphasis on an “asset-rich environment” was the catalyst for the parallel found between developmental instructional goals and outcomes. These findings demonstrate that program staff don’t readily count gains in content knowledge as program outcomes, yet the teen surveys showed that youth felt they were picking up content-specific skills.

**STEM and Enrichment Skill-Building**

 During the 2009 - 2010 program year the STEM Lab collected 523 youth surveys. Content-based skill-building was measured by the skill scale that combined youth’s assessment of the learning goal statements and the Universal Goals of teamwork, career, technology, and asset-building. Based on youths’ evaluation of the learning goals statements, presented in Table 2, it is apparent that teen participants felt that they gained content knowledge or skills at the program. Due to the number of courses offered The STEM Lab courses were grouped in four categories that represent the foci of the curriculum. In each area, the ratings for the skill scale are at or above a “3” or “somewhat true”. Adolescents did not believe that they mastered the content of the courses but they reported gaining some content-related knowledge and skills during the courses.

We used a sample of 105 youth who attended the STEM Lab to examine what factors were associated with teens’ content gains. Table 3 shows that there were more males in the subsample than the general teen population (67 percent and 57 percent) and fewer high school aged teens (25 percent and 37 percent). The sample youth attended the STEM Lab almost twice as many days over the course of the entire 2009 – 2010 program year (14 days vs. 28 days), but no differences were found for race and school poverty. In our regression analysis we included gender, race, school poverty level, youth’s reasons for enrolling in their chosen course, interest in the content of the course, and the number of days that youth attended the course as potential factors that would predict teens’ ratings of skill-development. To help control how experience in other aspects of the STEM Lab may have contributed to teens’ assessment of current skill-development we also controlled for teens’ 2009 – 2010 attendance prior to the evaluated course and whether 2009 was the first academic year that youth were involved in the STEM Lab. The sample youth did not differ from other surveyed teens except more of the study youth reported not getting their first choice of course topic (15 percent vs. 9 percent).

 The results are displayed in Table 4 and show that only two factors were significantly related to teens’ self-reported skill-building, interest and school poverty level. The results for the remaining factors are omitted from the table because they were not significantly associated with adolescents’ self-assessments of skill-development. We report effect sizes to show the statistical effect of the studied factors. An effect size below .3 is considered small, .3 - .7 is moderate, and .7 and above is considered large. School poverty level reflects the percent of the students at youths’ home school who are enrolled in the Federal Free and Reduced School Lunch program. The results indicate that on average, youth in high poverty schools reported learning more than their peers in their content courses. It is possible that for youth who attend high poverty schools this is the first exposure to the rich STEM content offered at the STEM Lab. High poverty schools are often under-resourced and under the most pressure to improve test scores (Hochschild & Scovronick, 2003). Combined these constraints can lead schools to limit the instructional material to the traditional school curriculum which stands in stark contrast to the STEM Lab curriculum that offers courses on aerospace, robotics, video game design, and rocketry to name a few.

Adolescents’ interest in the course content was an even stronger predictor of skill-development. Other research has found interest to be an important factor for teens to want to attend out-of-school time activities (Mahoney, Vandell, Simpkins, & Zarrett, 2009) and these findings indicate that interest may also be critical for promoting knowledge gains and skills in adolescents. The results also emphasize the value in learning what appeals to youth and incorporating those interests into the program content. Surprisingly, attendance was not related to content-related skill-development. It is not immediately clear why, considering the link between attendance in organized activities and other positive youth outcomes found in prior research (Gardner, Roth, & Brooks-Gunn, 2008; Walker & Arbreton, 2004). Some research asserts that engagement in program activities, not attendance, is more likely to lead to youth outcomes (Bartko, 2005; Rose-Krasnor, 2008; Shernoff, 2010) and interest in the content may serve as a measure of youth engagement.

**Implications for Policy and Practice**

Engaging program content is what attracts youth to programs (Roth & Brooks-Gunn, 2003). In fact, the most popular reason for enrolling in a STEM Lab course was interest in the course topic. Even though we know that adolescents are engaged in content-rich activities while at after-school programs the outcomes related to that content have rarely been cast as contributions to youth development. Staff interviews demonstrated that content-related outcomes were also curiously absent from current notions of program outcomes at one program with a clear curricular focus. This is especially striking considering that program staff are the closest to the program content and to youth. It seems that the policy focus on broader developmental outcomes for youth have overshadowed the value of content-related knowledge and skills even at the point-of-service. It may be wise for policymakers and funders to acknowledge the outcomes of content-rich program activities, as they are the vehicles by which teens experience broader developmental outcomes. Program attendance often predicts youth outcomes (Mahoney, Larson, Eccles, & Lord, 2005) and while in programs youth participate in content-rich activities (Bouffard & Little, 2003). Content-based skills may also have implications for sustaining adolescent’s attendance in after-school programs, which has been a struggle for programs serving older youth (Herrera & Arbreton, 2006; Mahoney et al., 2009). Adolescents, more than younger children, can choose to attend after-school programs and opportunities to learn new skills play a prominent role in adolescents’ participation decisions (Borden et al., 2005; Chaskin & Baker, 2006; Harrington, Sheenan, & Blyth, 2011).

An advantage of content-related skills is that they can be assessed over a short-time period whereas it can take longer, possibly more than one academic year, to see changes in developmental outcomes such as academic achievement and social skills (Bonhert et al., 2010). In this study, youth reported content-based outcomes over a seven-week term. It may be possible then, to use content-based outcomes as evidence of program effectiveness in the short-term while programs work to improve other youth outcomes emphasized by after-school policies like academic achievement, improved social skills and psychological well-being, and reduction in problem behaviors.

**Applications to Practice**

 Many after-school programs may be ill equipped to assess content-related skills in youth. The STEM Lab had the luxury of an information management system, technical assistance of outside evaluators, and ample computers to administer youth surveys. This is unlikely the case for the majority of after-school programs serving adolescents. However, these resources are not requirements for assessing content-related outcomes. The youth surveys used at the STEM Lab are one example of how to assess content-related skill-building but there are other ways of doing so. For example, after-school instructors can conduct individual or group interviews with youth or final projects may serve as assessments of the content that youth learned. For low-stakes program improvement efforts informal conversations with youth may also suffice. At a minimum, programs need staff who are familiar with the program content. If staff are inexperienced at specifying learning outcomes they may find the guidelines presented earlier helpful. We recommend that programs move toward identifying learning outcomes for youth that align with the program content even if they are not fully equipped to assess these outcomes. We found that just by engaging with the curriculum, staff were more likely to identify content-outcomes which may highlight to staff and youth immediate gains from program participation. Once identified learning goals can be included in staff training to orient after-school instructors to the short and long-term goals of the program. Furthermore, the process of specifying learning outcomes can encourage staff to be more intentional in their practice and intentional programming is key to promoting positive youth development (Walker, Marczak, Blyth, & Borden, 2005).

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Footnotes

 1 The evaluation reports are not cited to keep the identity of the program confidential.

Table 1. Sample Developmental Assets Quotations

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| --- | --- |
| Program Outcomes | Sample Quotes |
|  External Assets |
| **Constructive Use of Time**: Youth programs | *I think if this center provides a safe place for the students to come to because from what the kids tell me, this is an area where there's a lot of gangs, they're a lot of negative influences. This is a positive place for them to come to where they don't have to afraid to express their willingness or want to set goal. They're surrounded by people who enforce that positive energy. Because the kids have a choice to come or not come, this isn't a school*.  |
| **Empowerment**: Safety | *In broad terms, I want them to away that we're here to support them, we're hopefully lead them on a road to success. It's like a home away from home. Somewhere where they can go and feel safe and explore. A positive direction for them. And I know I see that with the afternoon school kids.* |
| **Support**: Other Adult Relationships | *So I definitely find that that's a place for them to go and you know get that active, enriching environment that they might not get at home. They might not get the, "Hey, you're awesome!", you know, "You're a great student." You know and get the homework help that they need and have that person pushing them and saying, "What happened to your math grade?" What's going on? Let's do it, you know. Umm, I definitely see it as that.* |
|  Internal Assets |
| **Positive Identity**: Self-esteem; Positive view of future | *They're learning more than they'll learn in any school, I think, because all my staff that I interact with here, we all have that same goal. It's all about them growing, and the direction that they want to go through. I knew that if I could sit anywhere, I could be a nuclear physicist. And it leaks into them. They have that little confidence now.* |
| **Social Competencies**: Interpersonal Competence | *What’s the coolest thing here is that I see is beginning… of course this kids are bused from different schools. When they get here, they meet people from other schools. The thing that I love absolutely most is when I walk upstairs and you’ll see a group of girls and they are exchanging phone numbers, and you talk to this person and this person, and crush on this guy or whatever and they are talking back and forth. And they are all from different schools. They talk like they’ve been best friends since forever.* |

Table 2. Youths’ Self-Reported Skill Scale Scores

|  |  |  |  |
| --- | --- | --- | --- |
| Content Area | Scale Average | Scale Range | Percent of Surveys |
| Science Courses | 3.1 |  1.2 – 4 | 11 |
| Technology Courses | 3.1 |  1.0 – 4 | 18 |
| Engineering Courses | 3.1 |  1.6 – 4 | 31 |
| Enrichment Courses | 3.1 |  1.5 – 4 | 41 |
| Universal Goals | 3.1 |  1.0 – 4 | 100 |

*Note.* Science topics include forensic science and an overview of various science topics. Technology courses covered communications, video game design, and video production. Engineering courses included aerospace, an overview of engineering and digital engineering, and robotics. Service learning, sports, performing arts and business courses were classified as enrichment. Math was not included as a focal area but rather a topic that was embedded in the content courses.

Table 3. Characteristics of Teen Participants

|  |  |  |  |
| --- | --- | --- | --- |
|  | Sample Youth (N=105) | Other Youth Participants (N=899) | All Youth(N=1,004) |
| Gender |  |  |  |
|  Male  | 67% | 57%a | 58% |
|  Female | 33% | 43% | 42% |
|  |  |  |  |
| Race |  |  |  |
|  Asian  | 22% | 23% | 23% |
|  Latino | 55% | 51% | 51% |
|  White | 11% | 13% | 13% |
|  Other | 11% | 11% | 11% |
|  |  |  |  |
| Grade |  |  |  |
|  Middle School | 75% | 63%a | 65% |
|  High School | 25% | 37%a | 35% |
|  |  |  |  |
| School Poverty | 64% | 62% | 63% |
|  |  |  |  |
| Mean 2009 -10 Attendance  | 27 days | 14 daysa | 15 days |
|  |  |  |  |
| Enrollment Reasonsb |  |  |  |
|  Instructor | 24% | 23% | 24% |
|  Friends | 13% | 15% | 15% |
|  Interest in content | 72% | 76% | 75% |
|  Finish a projectb | 3% | 4% | 4% |
|  Repeat course | 11% | 16% | 15% |
|  1st Choice class full | 15% | 9%a | 10% |
|  |  |  |  |
| Average Skill-building Scale Scoreb | 3.2 | 3.1 | 3.1 |
| Average Interest Scale Scoreb | 3.2 | 3.1 | 3.1 |
|  |  |  |  |
| Recent Attendance  | 22% | N/A | N/A |
| First Year Enrollment | 81% | N/A | N/A |

a There was a difference between the sample youth and other participants

b Sample youth were compared to the other 418 youth who completed a survey. Not all surveyed youth were identifiable which limited our sample to the 105 teen participants.

*Note.* Program experience variables, had recent attendance in a prior term and the first year of enrollment, were only calculated for the sample youth.

Table 4. Factors related to Content-Related Skill-Building

|  |  |
| --- | --- |
| Factors | Skill-Building Scale Score |
| School poverty level | .12+ |
| Interest in the course content | .30\*\*\* |

+p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001.

*Note.* A small sample size can make it more difficult to achieve statistical significance. Therefore, coefficients with a p< .10 are presented in this study.

Figure 1. After-school instructors’ identification of program and content-based outcomes

Mission

All instructors identified two types of instructional goals

Curriculum Development

Discussion of Program Outcomes

Discussion of Curriculum