

The STARS Alliance NSF Common Core Indicators Report

June 13, 2012

The following is an abbreviated report of the STARS Alliance outcomes as they pertain to the NSF Common Core Indicators, defined by the *NSF-BPC Alliance Common Core Indicators—How to Measure and Report of January 2012*. We begin the report by providing context of the STARS Alliance through a brief introduction that includes a table presentation of our overarching goals as they align with the Common Core Indicators. A common thread among our goals is building community. We report activities and outcomes for Indicator 1 for the calendar year 2011. It should be noted that the Fall 2011 term was the start-up semester for 17 of the 31 Alliance institutions. Indicators 2 and 3 are reported cumulatively, as these are not isolated activities and events, but instead operate with a progressive effect building upon preceding years. Each Indicator is presented with the Indicator Tables 2, 3, 4 and 5, along with brief descriptive context and footnotes as necessary. We conclude the report with an overview of evaluation progress for future assessment of outcomes.

Introduction

The **STARS Alliance** is a community of practice for student-led regional *engagement*¹ as a means to broaden participation in computing (BPC). The Alliance has demonstrated the **STARS Computing Corps** (Corps) as a model for catalyzing regional partnerships through the tiered participation of students, professionals and educators in civic engagement and experiential learning. The STARS Initiation Project (NSF Award #0540523, 2006-2009) supported the piloting of the Corps and other STARS practices at 10 Southeastern colleges and universities. The STARS Extension Project (NSF Award #0739216, 2008-2012) extended STARS participation to include 20 Southeastern colleges and universities and added activities for broadening participation within the computing faculty ranks. The STARS Scaling Project (NSF Award #1042468, 2011-2016) is expanding the STARS Alliance to become a national resource for BPC by providing seed funding for institutions to implement STARS practices, and by serving as a dissemination vehicle and repository of effective BPC practices. Evaluation outcomes show that participation in STARS activities, particularly the Corps, enhances commitment and academic success in computing for diverse student groups. The **STARS Scaling Project** focuses on the national adoption of Corps practices to bring about a computing workforce that is larger, more diverse and with broader skill sets.

¹ The National Survey of Student Engagement (NSSE) defines *engagement*: “Student engagement represents two critical features of collegiate quality. The first is the amount of time and effort students put into their studies and other educationally purposeful activities. The second is how the institution deploys its resources and organizes the curriculum and other learning opportunities to get students to participate in activities that decades of research studies show are linked to student learning.” <http://nsse.iub.edu/html/about.cfm>

NSF Common Indicator Table 1. Community as a Cross-cutting Dimension of the Common Core Indicators

<i>Indicator</i>	<i>Community Building Outcomes</i>
<p>1. Individual participation and outcomes</p>	<p>The STARS Computing Corps (Corps) engages faculty and students in broadening participation through curricular efforts (pair programming) and fostering student-led community engagement.</p> <p>College student STARS Computing Corps participants:</p> <ul style="list-style-type: none"> • 843 student leaders at 40 current and past colleges and universities • 51% performing outreach, 31% mentoring, 12% research, 6% interns • 43% Black, 6% Hispanic; 50% women • 86% now considering graduate school • 90% felt computing abilities boosted • Academic performance improved, felt better prepared for careers • Found computing more relevant, developed their leadership skills <p>Faculty STARS Computing Corps participants:</p> <ul style="list-style-type: none"> • 67 STARS Faculty, 5 tenured, 3 promoted to leadership positions • 7 faculty created new Service Learning courses • 5 faculty support STARS student organizations • 12 faculty adopted Pair Programming into 43 classes • Faculty across the alliance developed 168 regional partners • Produced 13 journal, 44 conference papers, 12 posters • Faculty believe STARS connects them, promotes their careers <p>Participants in Corps projects:</p> <ul style="list-style-type: none"> • 36,000 K-12 Outreach attendees • 475 mentees mentored by 178 Corps mentors • 2,450 students in new Pair Programming courses • 1,357 attendees at six STARS Celebrations (annual conferences)
<p>2. Organizational capacity</p>	<p>Computing faculty receive two-year seed funding to participate in the STARS Alliance and prepare to institutionalize its practices of the Corps, mentoring and pair programming. Participation enhances the capacity of computing departments to: 1) interweave engagement throughout the undergraduate and graduate student experience; 2) promote student-led regional engagement (e.g., with K-12, industry, and the community); 3) recruit and advance diverse student groups in computing by engaging in a community of practice (e.g. Corps, demonstration projects, STARS Celebration, online social network, Affinity Groups, digital library). Measures of impact include, but are not limited to: the number of student organizations, clubs, or courses established, and the degree to which STARS engagement activities are integrated into existing</p>

	<p>computing courses. Faculty surveys, individual interviews and focus groups, Celebration attendee surveys, social media and digital library usage, institutional enrollments and graduation rates trends compared to national trends, institutional engagement trends compared to national trends.</p> <ul style="list-style-type: none"> • Created new communities: 17 NEW Alliance sponsored institutions in 2011 calendar year • 18 institutions have institutionalized STARS practices (SLC, mentoring, pair programming) • 6 STARS Celebrations connected 1,357 attendees (students, faculty, partners)
<p>3. Impact beyond the Alliance</p>	<p>Since 2006, the Alliance has supported over 40 colleges and universities to integrate student-led regional engagement into computing departments through a co-curricular (Corps). Eighteen of these schools have institutionalized the Corps and have also implemented and institutionalized STARS demonstration projects (mentoring, pair programming). The Alliance fosters continued national adoption of student-led regional engagement by providing: seed funding to computing departments that implement the Corps; a community of support through the STARS Online social network, website, and digital library; and the annual STARS Celebration leadership conference. Qualitative and quantitative measures of impact include, but are not limited to: Faculty surveys and interviews, Celebration attendee surveys, social media and digital library resources and usage, follow up surveys of social media and digital library users.</p> <ul style="list-style-type: none"> • 312 individual participants on STARS Online Social Community & 20 Affinity Groups in 2011 • Dissemination of more than 52 materials and tools through the BPC Digital Library

Indicator 1: Individual Participation and Outcomes

NSF Common Indicator 1 Table 2. Alliance Community or Network Building

We list the categories of our activities based upon who participated. We have all categories applying (pre-existing community at institution, etc.) and there is overlap.

Student & Faculty	Type of community engagement sought (with pre-existing community at institution, pre-existing beyond institution, Alliance-created, building personal network, other? Might be >1)	Evidence of participation & immediate value	Evidence of potential or applied value	Evidence of realized value
Student: Enrolled (multiple experiences, e.g., REU, mentoring, internship)	843 STARS Computing Corps students have conducted outreach to 36,000 K-12 students (2006-2011) in all categories of pre-existing community at institution, pre-existing beyond institution, Alliance-created, building personal network	Increased skills & abilities, new relationships, new collaborations, greater access to resources, enhanced self-efficacy, commitment to computing and intent toward graduate school	Attitudinal	Enrollment in undergraduate and graduate programs, retention, graduation
Student: Multi-day (specific course, camp)	Over 200* Multiple Outreach Events Across the Alliance in all categories of pre-existing community at institution, pre-existing beyond institution, Alliance-created, building personal network	Increased skills & abilities, new relationships, new collaborations, greater access to resources,	Attitudinal	Planned
Student & Faculty: Multi-day (specific course, camp)	1,357 attendees at 6 annual STARS Celebrations in all categories of pre-existing community at institution,	Increased skills & abilities, new relationships, new collaborations, greater	Attitudinal	Enrollment in undergraduate and graduate programs,

Table 2 Continued

	pre-existing beyond institution, Alliance-created, building personal network	access to resources, enhanced self-efficacy, commitment to computing and intent toward graduate school		retention, graduation; Faculty research collaborations; New STARS Partnerships
Student: Single Day (lecture, workshop)	Over 300* Multiple Outreach Events Across the Alliance in all categories of pre-existing community at institution, pre-existing beyond institution, Alliance-created, building personal network	Increased skills & abilities, new relationships, new collaborations, greater access to resources	Attitudinal	None
Student & Faculty: Web site hits	409 unique visits to Starsalliance.org+; 52 BPC Digital Library STARS Resources in all categories of pre-existing beyond institution, Alliance-created, building personal network	new collaborations, greater access to resources	Attitudinal	Planned
Student & Faculty: Participant in a network or community of practice	478 participants in STARS Online Community in all categories of pre-existing beyond institution, Alliance-created, building personal network	new collaborations, greater access to resources	Attitudinal	Planned

*2011 calendar year; + March 2012; all other data is cumulative.

NSF Common Indicator 1 Table 3. BPC Common Core Participant Matrix

2011											
ACTIVITY			PARTICIPANTS				EVIDENCE				
TYPE	DURATION (avg # days)	LEVEL of Participants	TOTAL # Participants **	Average % Female**	Average % URM**	% PwD	Intent to Persist	Engagement	Confidence	Knowledge / Skills	Progress
K-12 Outreach	6	Elem	269	68% (parents/teachers) +	49%	NC	Yes	Yes	Yes	Yes	Yes
	23	Middle	1564	56% (teachers)+	49%	NC	Yes	Yes	Yes	Yes	Yes
	20	High	3778	58%	68%	NC	Yes	Yes	Yes	Yes	Yes
	30	Combination (ES/MS; ES/MS/HS; HS/MS)	605	68%	83%	NC	Yes	Yes	Yes	Yes	Yes
	1	K-12 Teachers	16	60%	20%	NC	Yes	Yes	Yes	Yes	Yes
Ambassadorship	43	HS/College	4675	68%	76%	NC	Yes	Yes	Yes	Yes	Yes
Community Service	7	* Combination	355	69%	57%	NC	Yes	Yes	Yes	Yes	Yes

*Community Service includes: Community Adults (Refugees and Immigrants); Middle School Girl Scouts; Refugee Community; Senior Citizens

**All values are estimates as outreach participant ethnicity and gender are not formally collected at each event. + Parentheses indicate populations included in addition to students.

NC: This information was not collected

Indicator 2: Organizational Capacity Development: Colleges and Universities Funded by STARS

Indicator 2 Table 4. BPC Common Core Participant Matrix

NUMBER AND TYPES OF ORGANIZATIONS IMPACTED				TYPE OF IMPACT						MEASURE- MENT	POPULATION(S) IMPACTED						
K-12 School	Community College	University	Other	Sustain or institutionalize activities	Create policy change	Train/educate/ develop skills and knowledge	Generate and/or disseminate tools	Expand stakeholder awareness	Other	How is this change measured?	K-12 students	CC students	4-year students	Graduate students	K-12 faculty	CC faculty	University faculty
61 schools and districts				x	x	x	x	x	Conduct Research of BPC Activities	Annual Narrative Reports via STARS Alliance Post-Secondary Institutions; Localized studies of outreach activities	x	x	x	x	x		

	4			x	x	x	x	x	Conduct Research of BPC Activities	Annual Narrative Reports via STARS Alliance Post-Secondary Institutions; Localized studies of outreach activities	x	x	x	x		x	
		30		x	x	x	x	x	Conduct Research of BPC Activities	Annual Narrative Reports via STARS Alliance Post-Secondary Institutions; Localized studies of outreach activities	x	x	x	x	x	x	x
			19 Professional Associations	x	x	x	x	x	Conduct Research of BPC Activities	Annual Narrative Reports via STARS Alliance Post-Secondary Institutions; Localized studies of outreach activities	x	x	x	x	x	x	x

			66 Corporate Partners	x	x	x	x	x	Conduct Research of BPC Activities	Annual Narrative Reports via STARS Alliance Post-Secondary Institutions; Partner follow up surveys	x	x	x	x	x	x	x
			25 Community/Non-profit organizations	x	x	x	x	x	Conduct Research of BPC Activities	Annual Narrative Reports via STARS Alliance Post-Secondary Institutions; Localized studies of outreach activities; Partner follow up surveys	x	x	x	x	x	x	x

Indicator 3: Alliance Impact

Indicator 3 Table 5. BPC Common Core Participant Matrix

DESCRIPTION OF IMPACT	TYPE OF COMMUNITY IMPACTED	TYPE OF IMPACT							CHANGE OVER TIME
		Alliance Expansion	Transition	Collaboration	Services/ Resources	Funding	Dissemination	Sustainability	
Outreach: K-12 Schools and School Districts across the U.S.	K-12 Students, Teachers, Parents	x	x	x	x		x	x	CS pipeline expansion; annual enrollments and graduations
Resources & Community of Practice: STARS Online Community	Faculty, Graduate and Undergraduate Computing Students	x	x	x	x	x	x	x	Alliance expansion from 10 (2006) to 50 (2014) seed-funded institutions
STARS on BPC Digital Library	Researchers and Practitioners in BPC	x	x	x	x		x	x	Open access to STARS Best Practices Collection; 52 resources

Table 5 Continued

<p>STARS Haiti collaboration with One Laptop Per Child & Waveplace</p>	<p>Women in Haiti</p>		<p>x</p>		<p>x</p>	<p>x</p>			<p>Computer Education & Training for underserved women</p>
<p>STARS Celebration Annual Conferences</p>	<p>BPC Alliances and all individuals interested in BPC</p>	<p>x</p>	<p>Student centered conference open to national BPC community; 1,357 students, faculty, & community partner attendees at 6 conferences</p>						