BPC-A: Empowering Leadership Alliance (ELA)

Evaluation Report: Second New England Undergraduate Computing Symposium (NEUCS)

José Cossa

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Contents

SUMMARY

The committee of New England Computer Science Chairs (NECSC) and the New England Empowering Leadership Alliance (NEELA) organized the Second Annual New England Undergraduate Computing Symposium (NEUCS 2010), which aimed at celebrating *Excellence and Diversity* in Undergraduate level Computer Science in New England. This evaluation is based on responses to the survey conducted with students who participated in NEUCS 2010 and an assessment of how these responses fit within the framework of the *NSF-BPC Common Core Indicators*.[1] Each indicator corresponds to a BPC goal and we have plugged responses to questions of the survey into their corresponding goal-based sections.

Table 1 provides the conceptual framework used by the NSF-BPC in describing the key evaluation components comprising of activities, participants, outcomes/measurement, and indicators.

Table 1: Conceptual Framework

Activities	Participants	Outcomes/Measurement	Indicators
Each BPC project offers at least some of these activities, and may offer additional specialized ones. The Alliance provides, creates, or facilitates…	People take part in the Activities	The project measures the effect of the activities on the participants. The project identifies appropriate outcomes and the best way to measure.	The project summarizes key outcomes into at least one of these indicators.

In evaluating the work of the various ELA groups, which include regional groups such as NEELA, it is essential to do so within the framework of the overarching ELA goal:

- ☐ **Increase the number of students** from underrepresented groups at research universities across the country receiving undergraduate and graduate degrees in the computing disciplines.
- ☐ **Support placement of students** into advantageous careers after graduation.

Under the same theme as that of NEUCS 2009, NEUCS 2010 was a success in that it fulfilled the organizers' goals of celebrating excellence and diversity in undergraduate level Computer Science in New England. Table 2 shows that, while excellence in diversity was evident in gender (54% were male and 46% were female, a **14% decrease in female participation**) and in the wide range of research interests (e.g., gaming, robotics, networking, website development, social media, security, mathematics, art, etc.), work needs to be done towards diversity in regards to race/ethnicity. Since the aim of the ELA is to increase, primarily, participation of Hispanics (and other minorities) in research universities (R1) across the United States, it was essential to gather information pertaining to respondents' citizenship in order to assess whether respondents fulfilled the category of the ELA target—In this light, the survey revealed that 81% of the students who participated in NEUCS were American citizens and/or Green card holders. This question is not intended to suggest that the ELA/NEUCS should discriminate in regards to students reached, but to assist in measuring the participation of its key target population.

A comparison of NEUCS 2009 and 2010 shows that there was no increase in the percentage of Hispanics (3% in both years), there was an increase in the percentage of Caucasians (from 60% to 72%), a five percent decrease in the percentage of African American/Black participation (from 8% to 3%), a decrease in Asian Indian (from 10% to 9%), and 11% decrease in other Asian (from 21% to 9%). While NEUCS 2009

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[1] Revised for BPC Evaluators' Meeting – Los Angeles, February 1, 2010[1]

registered no participation of Native American/Alaskan Native population, NEUCS 2010 had three percent participation by this student group; on the other hand, neither year had Native Hawaiian or Pacific Islander students participating. However, this year, there was six percent participation of students with a Middle Eastern ethnic origin.

Table 2: Student Participation by Race/Ethnicity, 2009-2010

	2010	2009
Mexican-American, Other Latin American	2.8%	7%
African American/Black	2.8%	8%
Caucasian/White	72.2%	60%
Native American, Alaskan Native	2.8%	0%
Native Hawaiian or Pacific Islander	0.0%	0%
Asian Indian	8.3%	10%
Other Asian (e.g., Chinese, Korean, Filipino, Vietnamese, Japanese, etc.)	8.3%	21%
Middle Eastern	5.6%	0%
Another race or ethnicity	8.3%	5%

In regards to recurring attendance, of the 43 students who participated in the NEUCS'09, only four participated in the 2010 NEUCS. This begs further investigation since last year most students (87%) claimed that they would attend another NEUCS and most (90%) claimed to have been satisfied, to some extent, with the NEUCS symposium. This year, there is also likelihood that students would attend another NEUCS symposium (approx. 95%) or recommend it to other students (approx. 91%). Nonetheless, overall, there is evidence that the NEUCS symposium has a positive influence on students, faculty, and departments and that it is sustainable. As an organization comprising of undergraduate computer science departments with their respective chairs in the entire New England region, most of whom have no purposeful association with the ELA, the NEUCS symposium also constitutes evidence that the ELA has an impact beyond the alliance's core *raison d'être*.

In this report, NEUCS symposium and NEUCS are used interchangeably. Often, the terms refer to the symposium rather than the consortium of Computer Science undergraduate departments in New England.

1 BPC Goal 1: Increase Participation in Computing of Individuals from Underrepresented Groups/Common Core Indicator 1: Individual Participation and Outcomes

This section contains information about how the NEUCS symposium responds to the goal of increasing participation in computing of individuals from underrepresented groups, which is measured by the indicator concerned with individual participation and outcomes. The main concern is minority representation, i.e., women and other underrepresented minorities (URM). Table 3 describes the activities, participants, outcomes/measurement, and indicators linked to Goal 1. In Table 3, the measurement of the goal to increase participation is based on self-reported data obtained herein through a survey. The common core indicator of individual participation and outcomes is comprised of indicators concerned with motivation to continue and advancement in computing.

Table 3: NSF-BPC Goal 1, Activities, Participants, Outcomes/Measurement, and Indicators

Goal 1: Increase Participation in Computing of Individuals from Underrepresented Groups			
Activities	**Participants**	**Outcomes/Measurement**	**Indicators**

Engaging experiences with computing (hands-on, real-world, in-depth, and/or "cool")	See participant table: by activity, report level and # of participants served and number/ percent who are URM of various types	Self-reported increase in interest, org records on retention	1. Motivation to continue
			  a. Interest in computing
			  b. Confidence
			2. Advancement in computing
			  a. Increased technical skills and knowledge
			  b. Increased knowledge of field and next steps
			  c. Academic progression (transition pre-degree)
			  d. Intent to progress in education/career

Knowledge about career opportunities, culture of computing, the next educational or career step		Self-reported increase in knowledge or awareness	
Skill/qualification enhancement (tutoring, bridge programs, REU)		Self-reported increase, mentor reports, grades, drop-out rates	
Mentoring of students (a favored strategy for engagement and/or skill improvement		Self-reported increase in confidence or interest, reduced drop-out rates	

1.1 MOTIVATION, CONNECTEDNESS/NON-CONNECTEDNESS, AND ADVANCEMENT

Motivation and advancement are closely related to whether an individual feels connected, or not, to some kind of community.[2] According to research, connectedness—this could be stated in terms of relationship, interaction, mentorship, etc.—between faculty-student and student-student interaction is a strong predictor of retention in major.[3] Table 4 shows that, overall, students feel connected to their computing community with most students claiming to feel very connected to faculty at their home institution and to their advisor. Sixty-eight percent (n=25) of the students claimed to be very connected to faculty at their home institution and 65% (n=24) very connected to their advisor; 68% somewhat connected to other students they met at NEUCS and 54% (n=20) somewhat connected to other computing majors at their home institution; and, 54% not at all connected to other CS faculty—i.e., not at their home institution, that they met at NEUCS— and 49% (n=18) not at all connected to other computing majors. This data suggest that most students attending NEUCS are those who have already established networks in their departments, which may imply that there is a need to reach out to those students who are not connected to their advisors or fellow students. Cossa and Barker (2009) have raised the question pertaining to the phenomenon of *non-joiners*, which suggested to the ELA the need to reflect on ways to

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[2] See, for example, Sharrazin, P., Vallerand, R., Guillet, E., Pelletier, L., & Cury, F. (2002). Motivation and Dropout in Female Handballers: A 21-Month Prospective Study. *European Journal of Social Psychology 32, 3,* 395-418.

[3] See for example: Cohoon, J. M. (May 2001). Toward Improving Female Retention in the Computer Science Major. Communications of the ACM; and, Cohoon, J. M. (2007). Gendered Experiences of Computing Graduate Programs. *ACM SIGCSE Bulletin* 39(1): 546-550.

attract *non-joiners*; this suggestion is also pertinent to the organization of NEUCS in that chairs ought to consider alternative ways to attract non-joiners to attend the NEUCS symposium.[4]

Table 4: Connectedness/Non-Connectedness

How connected do you feel to:

Answer Options	Very connected	Somewhat connected	Not at all connected	Don't know/Not applicable	Response Count
Other computing majors at your home institution.	15	20	0	2	37
Other computing majors not at your home institution.	1	17	18	1	37
Other students you met at the NEUCS symposium.	3	25	8	1	37
Faculty at your home institution.	25	12	0	0	37
Other CS faculty, not at your home institution, that you met at the NEUCS symposium.	1	14	20	2	37
Your adviser.	24	12	1	0	37
Other	1	1	0	15	17
(please specify)					0

Table 5 shows how, in general, NEUCS influenced students' motivation to continue in and complete their degree in computing. Most students agree that, as a result of attending NEUCS, they are more excited about computing (50%), feel as if they are a part of a larger computing community (38%), know their peers better (43%), have increased support/network to succeed in computing (43%), and clarified/reaffirmed their research and educational goals (33%). Approximately 18% no longer consider dropping out of CS and no longer consider changing their major, which implies that at some point in their studies these students had considered dropping out of CS or changing their major.

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[4] http://www.empoweringleadership.org/evaluation/Tapia_Report_Cossa-Barker_June_2009.pdf

Table 5: Impact of NEUCS

AS A RESULT OF ATTENDING THE NEUCS SYMPOSIUM...

Answer Options	Disagree Strongly	Disagree Slightly	Disagree	Agree	Agree Slightly	Agree Strongly	Don't know/ Not applicable	Response Count
I am more excited about computing.	0	1	2	21	9	7	2	42
I feel as if I am part of a larger computing community.	0	1	1	16	8	12	4	42
I know my peers better.	0	1	5	18	9	5	4	42
I have increased support/network to succeed in computing.	0	2	7	18	8	4	3	42
I clarified/reaffirmed my research and educational goals.	0	2	6	14	9	5	6	42
I NO LONGER CONSIDER DROPPING OUT of CS	0	1	0	3	2	3	33	42
I NO LONGER CONSIDER CHANGING MY MAJOR (from CS to another)	0	1	0	3	2	3	33	42

Table 6 shows how specific symposium activities had an impact on students. The majority of the students found most activities of the symposium to be valuable, but the most valuable activities were informal meaningful conversations and poster sessions. Approximately 98% of the students found value in informal conversations with faculty and 95% found value in informal conversations with other students. Eighty-six percent favored, i.e., as valuable/very valuable, poster sessions II and III, while 84% favored poster session I. Seventy-three percent of the students claimed that location was an important, i.e., valuable/very valuable, component. Interestingly, half of the students were unable to determine whether 'prior knowledge of judging criteria for posters' had any value or no value at all.

Table 6: Value of Symposium Activities

HOW VALUABLE (for you) were the following symposium activities/components?

Answer Options	Not at all valuable	Slightly valuable	Valuable	Very valuable	Didn't experience/ don't know
Keynote address	1	10	13	11	7
Poster session I	0	3	20	16	4
Poster session II	0	4	22	15	2
Poster session III	0	3	24	13	3
Prior knowledge of judging criteria (for posters)	4	10	4	3	21
Students' talks	0	8	20	9	6
Announcements	2	11	16	1	13
Informal meaningful conversations with other students.	0	3	20	18	2
Informal meaningful conversations with faculty.	0	3	23	16	1
Awards/Prizes	8	12	9	4	10
Lunch round-table discussion with faculty and professionals.	1	9	16	10	7
Career panel	2	13	11	9	8
Program	1	12	17	9	4
Website	1	13	16	6	6
Email communications	1	7	18	10	7
Publicity	1	10	15	6	11
Location	2	8	17	14	2

1.2 KNOWLEDGE AND CONFIDENCE: DEGREE COMPLETION, PATHWAYS TO GRADUATE SCHOOL/RESEARCH CAREER, AND NETWORKING

Table 7 shows that, to some extent, most students agreed to have been helped by the NEUCS symposium. Seventy-six percent developed confidence about their research, 65% developed confidence to complete their undergraduate degree in CS, 85% gained ideas about research in CS, 71% gained ideas about academic careers in CS, 75% gained ideas about networking with professionals, 75% gained ideas about connecting their research with that of other students, 78% gained general knowledge about research, 90% saw the symposium as a venue to share their research. Interestingly, in regards to gaining ideas about connecting their research with that of professors in other institutions where they hope to go to graduate school, opinions were split in that 51% agreed, to some extent, that the symposium was helpful while 49% were not sure whether it was helpful, or not.

Table 7: Symposium Impact on Confidence, Information, and Knowledge

The NEUCS symposium has HELPED ME TO:

Answer Options	Disagree Strongly	Disagree Slightly	Disagree	Agree	Agree Slightly	Agree Strongly	Don't know/ Not applicable	Response Count
Develop confidence about my research.	0	1	1	16	7	10	8	43
Develop confidence to complete my undergraduate degree in CS.	1	0	3	13	6	9	11	43
Gain ideas about research in CS.	0	0	1	17	8	11	6	43
Gain ideas about academic careers in CS.	2	0	5	14	11	5	6	43
Gain ideas about networking with professionals.	1	0	5	15	12	4	5	42
Gain ideas about connecting my research with that of other students.	1	0	4	19	8	5	6	43
Gain ideas about connecting my research with that of professors in other institutions where I hope to go for graduate school.	0	0	10	13	6	3	11	43
Gain general knowledge about research.	0	0	1	14	8	11	9	43
See a venue to share my research.	0	0	0	13	10	13	4	40
Other (please specify)								1

Table 8 shows that Most students increased, to some extent, or 'did not change' their interest in pursuing graduate education , research, careers, developing a NEUCS group on their campus, building network of peers, and building a network of professionals. Specific to each question, the 69% of the students increased their interest in becoming involved or continuing their research in computing or a related field, 60% increased their interest in building a network of professionals in their field of study, 56% increased their interest in building a network of peers in their field of study, 53% increased their interest in getting more information about graduate programs in computing or related field, 47% increased interest in continuing in their current educational program, 45% increased interest in applying for graduate programs in computing or a related field, 41% increased interest in pursuing academic career in computing as a professor, and 36% increased interest in pursuing an industry career in computing. In regards to starting student groups, 20% increased interest in developing a local NEUCS group on their campus and 11% increased interest in developing an ELA group on their campus. Based on informal conversations that the evaluator held with students during the symposium, this higher interest in NEUCS over ELA may be due to the fact that (some) students were not familiar with the connection between NEUCS and the ELA. Assuming that such is the case, perhaps a more clear connection between the regional group and the alliance needs to be communicated to students by the organizers of the event and professors. Interestingly, the only decrease in

interest was registered in 6% of the students in regards to pursuing an industry career in computing or related field.

Table 8: Symposium Impact on Interest

Answer Options	Greatly decreased my interest	Slightly decreased my interest	Decreased my interest	Did not change my interest	Increased my interest	Slightly increased my interest	Greatly increased my interest	Don't know or not applicable
Continuing in my current educational program.	0	0	0	15	9	9	0	4
Getting more information about graduate programs in computing or a related field.	0	0	0	12	14	5	1	5
Applying to graduate programs in computing or a related field.	0	0	0	14	11	5	1	6
Becoming involved or continuing my involvement in research in computing or a related field.	0	0	0	9	13	10	3	2
Pursuing an academic career as a professor in computing or a related field.	0	0	0	18	11	2	2	4
Pursuing an industry career in computing or a related field.	0	0	2	17	9	3	2	4
Developing a local NEUCS group on my campus.	0	0	0	24	6	0	1	6
Develop a local ELA group on my campus.	0	0	0	23	4	0	0	10
Building a network of peers in my field of study.	0	0	0	15	14	2	4	2
Building a network of professionals in my field of study.	0	0	0	12	15	3	4	3

Career Panel comprised of a Native American female researcher, an Asian Indian female in industry, a Caucasian male undergraduate student who is currently employed, and a Puerto Rican entrepreneur and professor. The diversity in the panel provided students with a balanced perspective on careers in computing. Table 9 shows that 75% agreed, to some extent, that they gained general helpful information about careers in computing, 67% learned about specific paths leading to a job in industry, 62% learned about specific paths leading to a job as a researcher, 56% feel more confident about what careers to

consider, and 46% learned about specific paths leading to a job as a professor. Ultimately, the panel reached its goal to inform students about careers in computing.

Table 9: Influence of Career Panel on Perceptions about Career Paths

How did the career panel influence your perception of career paths in computing?

Answer Options	Disagree Strongly	Disagree Slightly	Disagree	Agree	Agree Slightly	Agree Strongly	Don't know/Not Applicable	Response Count
I learned about specific paths leading to a job as a RESEARCHER.	0	0	7	13	7	3	7	37
I learned about specific paths leading to a job as a PROFESSOR.	0	0	12	10	2	2	11	37
I learned about specific paths leading to a job in INDUSTRY.	0	0	5	13	8	4	7	37
I gained general helpful information about careers in computing.	0	0	3	12	10	6	6	37
I feel more confident about what careers to consider.	0	1	8	8	11	1	8	37

From the responses in Table 10, we can infer that while the talk on entrepreneurship did not generate immediate positive results in the majority of students since most students were not inspired to start their own company during or after their undergraduate and graduate studies, the highest percentage (47%) of respondents who agree that the talk influenced them to think about entrepreneurship comprises of those who would consider starting their own business after graduate school. This result is, to some extent, in harmony with the speaker's message whose emphasis was that students should engage in entrepreneurial ventures after completing their degree and obtained at least two years of work experience in industry. Most students disagree that the talk influenced them to (a) consider their own computing business during their undergraduate degree (73%); (b) immediately following their undergraduate degree (70%); (c) during graduate school (67%); and, (d) after graduate school (53%). Interestingly, 69% disagreed that the talk influenced them to never start their own computing company. The latter could mean that, while most disagree that the talk influenced them to start their own business during or following their studies, the talk may have influenced them to think of the possibility of starting their own entrepreneurial ventures at the some point in the future. In other words, while we may not be certain whether students will, indeed, start an entrepreneurial venture in the future, we are certain that they were not discouraged to become computing entrepreneurs and can infer likelihood that they will consider it an option.

Table 10: Influence of Entrepreneurship Talk on Career Pathways

How did the talk on entrepreneurship influence you to think about careers in computing? The talk influenced me to…

Answer Options	Disagree Strongly	Disagree Slightly	Disagree	Agree	Agree Slightly	Agree Strongly	Response Count
Consider starting my own computing business during my undergraduate degree studies.	6	2	15	5	3	0	31
Consider starting my own computing business immediately following my undergraduate degree.	6	1	15	2	7	0	31
Consider starting my own computing business during graduate school.	5	2	14	4	5	1	31
Consider starting my own computing business after graduate school.	3	2	12	5	9	0	31
Never start my own computing business	4	4	13	4	4	1	30

Table 11 shows that all students met at least one other student for the first time at NEUCS and that most students (67%) met five or more students for the first time. Most students (97%) met at least one faculty or researcher for the first time; most (78%) met at least one faculty or researcher, not from their home institution, for the first time, with whom they had a conversation about their (students') future studies or career prospects; most (72%) met at least one student, not from their home institution, for the first time, with whom they had a conversation about their studies or future career prospects. Only 39% met at least one industry professional with whom they had a conversation about future career prospects. From the data, we can infer that while most students had conversations with faculty and researchers, not from their institutions, about their studies and career prospects, next NEUCS may benefit from intentionally creating a setup for more interaction between students and professional.

Table 11: Networking at NEUCS

Tell us about your networking at the NEUCS symposium. [PLEASE PROVIDE ESTIMATES]

Answer Options	None that I know of	1-2	3-4	5 or more	Response Count
How many FACULTY or RESEARCHERS did you meet for the first time?	1	13	14	8	36
How many STUDENTS did you meet for the first time?	0	5	8	24	37
With how many INDUSTRY PROFESSIONALS did you have a conversation about future career prospects?	22	10	4	1	37
With how many FACULTY or RESEARCHERS NOT FROM YOUR HOME INSTITUTION did you have a conversation about your studies or future career prospects?	8	23	5	1	37
With how many STUDENTS NOT FROM YOUR HOME INSTITUTION did you have a conversation about your studies or future career prospects?	10	8	12	7	37

2   BPC Goal 2: Build Organizational Capacity to Sustain Increased Participation/Common Core Indicator 2: Organizational Capacity Development

This section contains information about how NEUCS responds to the goal of building capacity to sustain increased participation (in computing of individuals from underrepresented groups), which is measured by the indicator concerned with organizational capacity development. Table 12 describes the activities, participants, outcomes/measurement, and indicators linked to Goal 2. In Table 12, the measurement of the goal building organizational capacity to sustain increased participation is based on questionnaire items addressing event advertisement, things to improve, event logistics and organization, and best part of meeting.

Table 12: NSF-BPC Goal 2, Organizational Capacity

Goal 2: Build Organizational Capacity to Sustain Increased Participation		
Development of new academic opportunities	Report number of participants at various levels (e.g. HS teacher, community college faculty, university faculty) in professional development.	New courses or curricula developed, student reaction
Professional development in pedagogy or mentoring		
Pathways built or enhanced between institutions/schools/levels	Report number of institutions engaged in more/less intensive activities to improve infrastructure and procedures	Number of new or enhanced pathways, number of students affected by pathway
New organizational practices within institutions, e.g., revised selection process, revised reward structure, physical accessibility		
Improved culture for URM		Increased respect for diversity, advocacy

Table 13 shows that departmental communication, through advisors and professors, is the primary vehicle through which students learn about NEUCS. Sixty-one percent heard about NEUCS from one of their professors (not their adviser) and 50% from their adviser. From the data, we can infer that department's website and web search are not favorable vehicles for finding NEUCS. This inference is further supported by the fact that, in 2009, 58% heard about NEUCS from their advisers and 40% from their professors.

Table 13: NEUCS Advertisement

How did you (originally) hear about the NEUCS symposium?

Answer Options	Response Percent	Response Count
From my adviser	50.0%	18
From one of my professors who is not my adviser	61.1%	22
From the department's website	8.3%	3
From browsing the web for CS events	2.8%	1
Other (please specify)		1

In regards to suggestions for improvements (see Table 14), most students (62%) would like more informal interaction between presenters, students, and other audience members; 54% suggest allowing for student dialogue in small group breakout sessions; 45% suggest mixing the students up to allow them to interact with students from other schools; 43% suggest hosting event in location accessible by public transportation; and, 40% suggest Videotaping the NEUCS Symposium to show in different venues (e.g., local television, YouTube).

Table 14: Things to Improve

If you were to organize or help organize a NEUCS symposium, what would you do differently? [CHECK ALL THAT APPLY]

Answer Options	Response Percent
Ensure that presenters interact informally with students and other audience members	62.2%
Allow for student dialogue in small group breakout sessions	54.1%
Mix the students up, so they interact with people from other schools	45.9%
Host event in location accessible by public transportation	43.2%
Videotape the NEUCS Symposium to show in different venues (e.g., local television, YouTube)	40.5%
Have an open forum (for discussion) after presentations	37.8%
Start the day with "icebreakers" (activities that allow participants to become more comfortable speaking with one another)	32.4%
Allocate more time for the posters	32.4%
Allocate more time for the presentations	32.4%
Have the keynote address immediately before or immediately after presentation of awards	24.3%
Make the symposium a two days event (e.g., one day for posters and the next day for presentations)	21.6%
Nothing	0.0%
What else would you do?	
"How-to" session	
I would have another students-binding event after the presentations to give students a chance to talk to each other after introducing their research.	
I feel like the poster sessions need more demonstrations as many of the posters, which talked about interesting things became boring with no visual idea about what they were saying.	
Ensure student presentations are within time constraints and applicable/accessible by the target audience.	

3   BPC Goal 3: Create Impact from the Alliance beyond the Immediate Activities/Common Core Indicator 3: Alliance's Impact

This section contains information about how NEUCS responds to the goal of creating impact from the alliance beyond the immediate activities, which is measured by the indicator concerned with alliance impact.

Activities	Participants	Outcomes/Measurement	Indicators
Each BPC project offers at least some of these activities, and may offer additional specialized ones. The Alliance provides, creates, or facilitates…	People take part in the Activities	The project measures the effect of the activities on the participants. The project identifies appropriate outcomes and the best way to measure.	The project summarizes key outcomes into at least one of these indicators.
Goal 3: Create Impact From the Alliance Beyond the Immediate Activities			
Information and resources for academic professionals	Report number of activities common to alliance members	Number of community building activities: student and faculty reaction	1. Spread of practices within the Alliance from one member to another
Strategic infrastructure development	Report number of advisory groups and frequency of interactions	Measure increased synergy and constituent buy-in to overall goals and objectives; measure institutional climate changes	2. Effectiveness of dissemination activities 3. Evidence of spread beyond Alliance to other communities 4. Evidence of connections to other Alliances 5. Identification of potentially sustainable practices
Communication infrastructure development	Report number and types of communication mechanisms used by project	Measure use and effectiveness of various delivery methods	

The alliance impact is witnessed by the claim of students' connectedness with those outside of their immediate community (see Table 4): connectedness with other students they met at NEUCS (68% somewhat connected to other students they met at NEUCS); and, connectedness with other computing majors at their home institution (54% somewhat connected to other computing majors at their home institution). Moreover, as an organization comprising of undergraduate computer science departments with their respective chairs in the entire New England region, most of whom have no purposeful association with the ELA, the NEUCS symposium also constitutes evidence that the ELA has an impact beyond the alliance's core *raison d'être*.

4 RECOMMENDATIONS

Based on the findings in this report, we recommend the following:
- **Continue to hold the NEUCS symposium on a yearly basis**, but take into account accessibility and convenience of site (e.g., accessible by public transportation and free parking).
- **Continue to engage students in activities that will enhance their feeling of connectedness.** Students claimed to feel connected to both advisers and faculty, but these can be fragile relationships less there is continual nurturing by faculty and advisers (e.g., continue to encourage students to participate in research events, provide direction towards future projects, make students aware of funding opportunities, usher them into the arena of research and scholarship by connecting them with other researchers and scholars, etc.).
- On the other hand, since it is much easier to attract students who have a tendency to join activities, **chairs ought to consider alternative ways to attract non-joiners to attend the NEUCS symposium.**
- **Continue to purposefully organize activities and plan ways to "force" faculty-student interaction.** One positive change from last year's arrangement was that there was a purposeful

setup to have at least one faculty member at a table during lunch. Adding industry professionals on each table would help students connect with industry professionals as well.

- **Continue to encourage students to stay in major and to complete their degree.** While approximately 18% of the students who responded no longer consider dropping out of CS and no longer consider changing their major, **NEUCS may reach more vulnerable students by making this a topic of one of the symposium sessions**, i.e., perhaps in the same fashion as the career panel, **or by creating a safe forum in which students considering to drop from major can come and find help** to make an informed decision.

- Interestingly, half of the students were unable to determine whether 'prior knowledge of judging criteria for posters' had any value or no value at all. Nonetheless, **it will be best to send the judging criteria/rubric to presenters and judges prior to NEUCS.**

- **Take space issues into consideration when planning the poster sessions.** While NEUCS 2009 enjoyed greater space for poster sessions, NEUCS 2010 did not. Splitting the sessions into three helped a lot, but there was still very little space to walk and it was hard for presentations to be heard without overhearing another conversation.

- **Create a virtual community that will help keep the flame alive.** This was discussed during the NEUCS 2009 dinner with the chairs, but has not been materialized. Our recommendation, as stated in the dinner, was that such community must form academic and professional networking opportunities (e.g., thus resorting to spaces such as LinkedIn rather than Facebook). It would be helpful for NEUCS to have these after symposium dinners to reflect about the symposium and about this particular plan.

- **Advisors and professors should continue to engage students to participate in research, i.e., beyond a class project that ends after NEUCS.** For instance, some students showed great enthusiasm in their posters, but seemed to lack guidance as to its potential continuity as a research project leading to a Master's or Ph.D. dissertation. Getting students engaged in research and to think about graduate school at an early age will contribute to NEUCS goal of celebrating excellence in undergraduate research. Also, if students can see connections between their current research involvements with that of professors in other institutions where they hope to go to graduate school, they may be more likely to see research continuity beyond a class project or the undergraduate degree.

- From the data, we can infer that while most students had conversations with faculty and researchers, not from their institutions, about their studies and career prospects, **next NEUCS may benefit from intentionally creating a setup for more interaction between students and professional.**

- **More work needs to be done to encourage a more diverse racial/ethnic participation.**

- **Continue to encourage gender diversity.**

- **Follow up on students' interest to start NEUCS-ELA groups.** Since (some) students were not familiar with the connection between NEUCS and the ELA, a more clear connection between the local group and the alliance needs to be communicated to students by the organizers of the event and professors.

- **Continue to encourage faculty-student grant-seeking (or other funding) partnerships**.

- **Continue to explore better publicity mechanisms**.

5 APPENDIX

Table 15: Event Logistics and Organization

Please provide feedback regarding event logistics and organization (e.g., food, transportation, hotel, entertainment, meeting room, communications with organizers).

For the most part, the organization during the event was done very well (food/posters/presentations/speeches), it would be good to ensure that adequate parking was available with earlier notice and clearer indication of where it was located, however.

Just to reiterate, the spearker in the talk on entrepreneurship … [Note: edited content due to language] was "disrespectful" at best to students at their posters. Personally, I think he might have been trying to help students he belittled, but in general was so arrogant he couldn't see a better way than to harass them verbally.

Logistics were poor from start to finish. The deadline for abstracts needs to be further away from the Conference date. Parking was inadequate. Program events were sketchy and published to close the event.

it was nice to be driven here by a faculty member

slightly inconvenient for hotel booking because it was the same weekend as the Boston Marathon

I thought the event was very well organized. The set-up of the venue was really good for this event. Food was good.

Everything was satisfactory

My University organized transportation and BU is a good central location.

Everything was very easily-accessible and easy to find.

Was tough to get there on time, and I had to leave early.

Great!

The food was a bit bland but good quality. Since I was already on campus it was easy for me to get to and from the location and transportation was direct and easy.

The program in general was highly successful. But the post sessions were a little bit too long.

it was in a good location and well organized, I thought

Please not in a hallway. It is a nice space but I did not appreciate the cross-traffic.

Table 16: Best Part of the Meeting

What was the best part of the meeting? What other comments do you have?

Poster sessions

I loved being able to chat informally with other students. I feel like a more structured event (i.e., formal "breakout" sessions, more presentations) would inhibit that contact.

Having a very interesting conversation with a student during one of the poster sessions whose interests were similar to my own.

Meeting people in computer science who regularly bathe unlike a sizable percentage of the CS population at my school.

In spite of inadequate planning time, once at the conference it went pretty well. The day more or less went smoothly.

Poster session, because I got to share my work

For me, the best part of the meeting was just being able to meet new people and to see what types of projects they are working on. I really enjoyed the keynote speaker and student presentations too.

Meeting and interacting with the faculty, students and industry members

I enjoyed very much the poster presentations to see what research students are doing at other universities. I have been talking with friends who are also interested in finding ways for undergraduates at my university to conduct CS research.

The poster sessions were exactly with the right duration and size (not too many or too few posters per session). This allowed everyone to get to know everyone else's work. Overall, I really enjoyed the program!

The lunch with professors from other schools was great!

I almost got a job, but they were located too far away to commute.

Poster presentations, getting to see other undergraduate research projects.

The best part of the meeting was the chance to talk with the students and learn about their research. They have great energy and are wonderful communicators.

being able to tell others about my project increased my confidence and interest in research