

SETI Evaluation

Key Findings from Spring 2018 Survey of CALSTEP/SETI Participants and Other Users of CALSTEP's Products and Innovations

Introduction

This document presents findings from a survey conducted in Spring 2018 to: (a) document and assess progress achieved among SETI participants and other users of CALSTEP's products and innovations; (b) identify factors and conditions accelerating and compromising technology integration; and (c) identify additional training priorities and opportunities to leverage CALSTEP resources.

The report first introduces the methodology. This is followed by a summary of key findings. A more detailed presentation of survey findings follows. The report concludes with recommendations.

Methodology

A survey was developed with input from all members of the CALSTEP leadership team. The survey was distributed in February 2018 to 32 2016 and 2017 SETI participants and to users of CALSTEP technology and curriculum resources who have not yet attended SETI. Twenty-two responses were received between March 1 and March 13, 2018, including 19 complete, 2 partially complete, and one survey with only a few questions answered. Among SETI participants, the response rate for the 2017 cohort was 7/10 while the response rate for the 2016 cohort was 9/13. The overall response rate was 22/32.

The plan is to follow up with interviews asking users of CALSTEP technology, curriculum and other resources to describe in more detail their experience; students' response to the new resources; priorities for additional training; and ideas for how to continue to support faculty interested in technology use and integration after CALSTEP sunsets in Fall 2018. Eight survey participants agreed to participate in these interviews, including two part-time instructors. Four respondents, including two part-time instructors, were not sure if they wanted to participate.

Key Findings

All SETI participants have made progress in using/adapting SETI technologies/approaches into their classrooms. Two-thirds of survey respondents who participated in SETI 2016 or SETI 2017 have started using SETI technologies/approaches in their classrooms. The remaining one-third

of survey respondents plan to integrate SETI technologies/approaches into their classrooms this year (2018).

Respondents noted that the main barriers to making additional progress with technology integration are lack of time to learn how to use the technology and limited opportunities to learn how to use the technologies in the classroom.

In terms of support that could accelerate their progress integrating technologies, several survey respondents called for regular communication with other technology users, webinars, and a mentoring or buddy system connecting SETI participants and other CALSTEP users with each other.

Responses to an inventory of which technologies the survey respondents currently use in their classrooms indicate that aside from PowerPoint, which is widely used, other technologies are only used with regularity by a small number of instructors. This finding should be interpreted in light of the fact that the survey respondents are likely to be more interested in technology integration than most of their colleagues. Of particular note was the extremely limited use of CCC Confer/Confer Zoom resources and of polls and online surveys.

Priorities for technologies respondents would like to learn more about included: making your own video, assigning video watching outside of class, course flipping and automated grading of homework.

Only a small number of respondents shared observations about the impact their use of technology and alternative instructional methods have had on students. Most of these respondents pointed to learning opportunities associated with video assignments. Three respondents expressed satisfaction with their students' response to the CALSTEP lab curriculum.

Every user of the CALSTEP website would recommend it to colleagues. The users included five respondents who described themselves as using the site all the time and ten who visited the site "sometimes."

Summary of Findings

Survey Respondent Profile

The 22 survey respondents included seven members of the 2017 SETI cohort and nine members of the 2016 SETI cohort. Six respondents had not yet participated in SETI. This included three PT instructors.

Almost all respondents (19) teach engineering. In addition, seven each indicated they also teach math and physics with two respondents teaching all three subjects. One respondent teaches Computer Science. No respondent teaches chemistry.

The respondents included faculty members with limited teaching experience and many with decades in the classroom. Eight participants had five years or less teaching experience, while another eight have taught for 25 years or more. The average time in the classroom was 14.6 years of teaching.

Most respondents (14) teach full-time while six teach part time at one college and one teaches part-time at more than one college.

Among 21 respondents, just over half (52%) indicated there is one full time (FT) instructor teaching engineering at their college. Two respondents reported having 1.5-2 FT instructors teaching engineering while three have three FT engineering instructors. Two respondents have less than one FT instructor.

Experience with and Prioritizing of Technology Integration

Most respondents (12) indicated they have several years of experience using technology in the classroom while 6 indicated they have “some experience,” and 2 “limited experience.”

Respondents were asked to indicate the extent to which they prioritize technology integration in the classroom. Six of twenty respondents (30%) identified technology integration and use of alternative instructional approaches as their highest priority (a “5” of “5” on a scale from 1-5). Seven (35%) each assigned these approaches a priority of “3” and “4”. No respondents identified technology integration and use of alternative instructional approaches as a low priority (a “1” or a “2.”).

Among those who gave technology integration and alternative instructional approaches the highest priority, three (50%) had taught 5 years of less, while the other three (50%) had taught 10 years or more. Two were part-time instructors with only one year of experience.

State of SETI Applications/Technology and Alternative Instructional Approaches

Responding to a question about how much progress they have made in adapting/integrating SETI technologies and approaches into their classrooms, nine SETI participants indicated they are “using and integrating SETI technologies and approaches” in their classroom. This included 6 FT and 3 PT instructors (50% of PT SETI participants responding to the survey). One instructor had reached the even more advanced state of inviting others from his college to come to his classroom to see how he is using SETI technologies/approaches to enhance his teaching and student learning.

An additional 5 respondents indicated they have “begun to learn/adapt one or more SETI technologies/approaches and plan to integrate it “ in courses in 2018. This group included 4 FT and 1 PT instructor.

In comparing progress achieved by the 2016 and 2017 cohort members that responded to the survey, three in four members of the 2016 cohort are currently integrating SETI

technologies/approaches into their classrooms while among the 2017 cohort 57% have achieved this stage of application.

Impact of SETI Applications in the Classroom

While only nine faculty members answered a question about the impact that technology integration has had on their students, all but one was decisively positive – the one exception was one noting that some students liked the technology while others preferred the traditional mode of delivery. Among the eight positive responses, most concerned various advantages associated with videos while three referred specifically to the lab content developed by CALSTEP. Comments included the following:

Students enjoyed the materials design lab that was inspired from CALSTEP

Our circuits lab seems to run much smoother now

Students are better understanding of the materials because conceptual content knowledge is a large portion of the learning; also, students come to class better prepared (partial flipped classroom) and are asking deeper questions and applying knowledge quicker.

For the Graphics lab, the videos are MOST helpful. Students either use the videos or follow the lab handouts while helping each other and therefore everyone works at their individual pace. Being able to review the content beforehand allows for instructor to assist the students individually. Improvements can be made with updating the instructional guidelines (older version of software is presented in videos, etc.) concern benefits of videos – for graphics lab the videos most helpful

Students really appreciate that they can review the videos later on. It allows them to spend more time focusing on grasping the concepts in class (and then they can take handwritten notes on the material afterwards on their own time.) Students really appreciate they can review videos later on allows them

Interest in Collaboration and Additional Workshops/Joint Activities

Nine of 16 respondents (75%) indicated they had engaged with other SETI participants after concluding the training session. In response to an inquiry about their interest in additional connections, all 2017 cohort members said “yes.” Among the 2016 cohort, four wanted more contact; 3 did not.

When asked how they would like to connect with other SETI participants, most of the SETI alums preferred meeting in connection with the ELC. The second most popular choice was webinars hosted by different SETI participants who also get to set the agenda for the webinar.

Current Use of Technology and Interest in Additional Training

Respondents were asked to indicate which technologies they use in their classrooms and to also estimate how frequently they use each one and their interest in learning more.

Figure 1: Current Use and Interest in Learning More about Technologies

Technology Applications/Methods	Current Use				Interest in Learning More			
	Almost Always (100%-75%)	Frequently (74%-40%)	Occasionally (39%-10%)	Rarely (less than 10%)	Very Interested	Interested	Not Interested	Not familiar w. technology
PowerPoint	9	3	5	2	3	4	13	0
One Note	0	4	3	15	2	9	9	0
PDF Annotator	4	2	7	7	3	10	7	0
CCC Confer or Confer Zoom, Office Hrs	0	2	3	15	4	3	12	1
CCC Confer or Confer Zoom, Online Lectures	1	1	4	14	2	8	9	1
CCC Confer or Confer Zoom, Zoom Sessions	1	0	6	13	3	7	9	1
3C Media	1	1	4	15	4	7	6	3
NetSupport School	0	0	1	19	3	8	5	4
Online Surveys	1	2	7	10	3	8	8	1
Poll Everywhere	1	2	3	14	2	7	9	2
Make Your Own Videos	3	5	2	10	8	7	5	0
Assign Video Watching Outside of Class	4	2	4	10	7	8	5	0
Course Flipping	2	3	7	8	6	8	6	0
Electronic Homework Systems	4	4	5	7	1	12	7	0
Online Formula Quizzes in Canvas	2	1	6	11	5	7	6	2
Online Proctoring with Proctorio in Canvas	1	2	2	16	4	7	7	2
Automated Grading Online Homework	2	2	8	8	9	6	5	0

As Figure 1 depicts, PowerPoint is the technology most of the survey respondents (9 of 19) use “almost always.” PD Annotator is in a distant second place with 4 respondents indicating they use this technology “almost always.” At the other end of the scale, the CCC Confer/CCC Zoom technologies enjoy very limited use with a large majority (13-15) noting they rarely use these technologies. Similarly, a large majority rarely use NetSupport School, One Note, Online Surveys, Poll Everywhere and Online Proctoring.

In terms of interest in learning more about these technologies, the following four generated the most interest: Making own videos; Assigning video watching to students outside of class time; Course flipping and Automated grading of online homework.

While it is understandable that the interest in PowerPoint is limited given the fact that so many already use this technology, there was also limited interest in the three uses of CCC Confer/CCC Zoom and in online polling and surveys.

The interest in additional training for each of the 17 technologies listed ranged from a cumulative score of 45 for some participants to a low cumulative score of 15 for a few other participants. These scores were based on adding each survey respondent's assessment of their own interest in additional training for each technology on a scale from 1-3 where "1" meant not interested and "3" very interested. Overall two respondents had a cumulative interest score above 40 and an additional three had a cumulative score of 30-40. This group of "super-interested" technology users who want more training were all FT instructors. They included three instructors who have taught 5 years or less.

Responding to a general question about their interest in participating in future training activities hosted by CALSTEP, eleven respondents indicated they would be interested while two were not sure (one from the 2016 and one from the 2017 SETI cohorts) and two were not interested (both 2016 cohort).

Learning About and Recommending Use of CALSTEP Resources

Five respondents (3 FT and 2 PT instructors) indicated they use the CALSTEP website "all the time. Seven FT and 3 PT instructors indicated they visit the website "sometimes," while four (2 FT and 2 PG) have yet to visit the site.

15 survey takers responded to a question asking if they would recommend the CALSTEP website resources to their colleagues. All responded in the affirmative, including three faculty members who did not participate in SETI.

In terms of ideas for how to strengthen the CALSTEP website, four respondents expressed satisfaction with the current content and organization ("it is already very good," one user noted). Other respondents provided the following suggestions:

- *Have it be its own separate website; links sometimes loop*
- *Update the technology used in instructional videos.*
- *Less clicks to access content (or searchable index)*
- *Highlight the curriculum link more*

A few respondents identified additional resources to use for faculty interested in technology applications. These included VMSE website; Google Classroom; YouTube; Solidworks and Matlab websites.

What is the best way to reach potential CALSTEP website and other resource users? Most of the FT faculty participating in the survey had heard of the resources at the Engineering Leadership Council (8) or at SETI (6). Among the PT faculty, four of six heard about the resources from colleagues and one in an email from his dean.

Factors Compromising and Supporting Progress with Technology Integration

Eleven participants responded to a question about what SETI can do to support their continued integration of technology. Sample responses included:

Send links to resources that have been produced by CALSTEP/SETI team or other resources in our teaching areas that might be useful (e.g. vetted video collections, etc.)

Continue to show the latest technology used in education.

Keep communicating; sending surveys helps one to also reflect

Several respondents noted that they are not teaching at this time or that they realize the next step is up to them. Among those who provided actionable responses, two focused on the importance of maintaining communication and connections with other SETI/CALSTEP users. In a follow up question, survey respondents were asked to imagine that they were in charge of organizing the 2018 SETI. If you had this responsibility the survey asked, "What kind of support would you provide to help SETI completers successfully use their new technologies/resources back at their campuses?"

Sample responses included:

Presenters who will cover in depth of the topics covered. Maybe the workshop can divide into "beginners" and "intermediate" groups, or alternating years that cover many topics for beginners, and intermediate for some depth.

Maybe assign a "mentor" to check-in one-on-one with the participant. Help them over hurdles, encourage them to integrate one thing, then move forward on the next thing.

As I said previously, I think I'd like to partner with a buddy, either someone experienced or someone new at technologies like me just to have a sounding board

Presenters who will cover in depth of the topics covered. Maybe the workshop can divide into "beginners" and "intermediate" groups, or alternating years that cover many topics for beginners, and intermediate for some depth.

Overall, two themes emerged. One was the interest in having support from others, possibly in the form of a buddy or mentor. Another theme concerned webinars and the need for support in moving forward and applying the technologies in the classroom. The underlying theme may be the need for a SETI/CALSTEP community that can help faculty members move forward while feeling supported.

Time required to learn new technologies was identified by half of the 20 respondents as an "extremely important" or "important" limiting factor. The second most important barrier was opportunities to learn how to use the technologies in the classroom.

In terms of factors and activities that have helped participants make progress after SETI, five of 15 respondents pointed to a particular faculty member (4) or administrator (1) who have

encouraged, mentored and supported them. One PT participant noted: *“I am only a part time instructor but have full support of our single full time instructor. His support IS critical.”* Three others pointed to technologies introduced at SETI. One respondent noted: *“Having resources was amazing! I use Camtasia, the laptop, and PDF annotator all the time.”*

Engineering Course Offerings

Figure 2: Engineering Course Offerings

Frequency of offering	intro	graphics	statics	dynamics	materials	circuits	circuits lab	mat science	mat science lab
Not likely this year		1		8	6			1	1
Once a year	4	7	12	2	1	12	12	14	14
Every semetesr	16	12	8	1	1	8	8	3	3
Not likely near future				9	12			2	2
Grand Total	20	20	20	20	20	20	20	20	20

In response to a question about whether they would be interested in offering online through CALSTEP courses that their college does not offer, 12 respondents said “yes” and 3 indicated they were not sure at this time. In a follow up question about which courses would be a high priority for online delivery through CALSTEP, 2 respondents each pointed to Dynamics, Strength of Materials, and MATLAB. One pointed to Statics and one to Engineering Graphics. One respondent indicated s/he would be interested in offering CALSTEP online as an option for students to access all the courses his/her college is not delivering during a particular semester.

While Materials and Dynamics are the courses that most respondents indicated their college does not offer this year or is likely to offer in the future, only three respondents pointed to Dynamics and Materials as courses they would be interested in offering to their students through CALSTEP online. Eight respondents indicated they were not sure which courses they would like to offer through CALSTEP online.

Conclusion and Recommendations

In considering the findings presented in this report, it is important to bear in mind that we do not know how representative the survey respondents were of SETI participants and of engineering instructors across the state. However, it seems reasonable to consider the respondents to comprise a group of faculty members who have a strong interest in using technology and other alternative approaches to strengthening teaching and learning.

Overall, the survey findings indicate that SETI participants leave the training, deepen their learning of one or more technologies and approaches, and then use the new tools in their classrooms. We have yet to explore which technologies/alternative instructional methods the SETI completers are most likely to use.

Barriers identified as most important were time to learn how to use technology and opportunities to learn how to use technology in the classroom. Given this, the optimal training approach might be one where participants first spend time achieving a level of competency using a technology and then are provided with a mentor who can guide and support them – possibly through the initial development of a step-by-step plan and/or through observations of the mentor using the technology in their classroom.

Part-time faculty members made considerable progress in learning and using technology through SETI and on their own. It is important to reach this large group of faculty and to determine how to alert them to training opportunities. The survey responses showed that while FT faculty mostly heard about SETI and CALSTEP through the ELC, part-timers got the information through colleagues.

The state of technology integration, even among the SETI participants, is limited with only PowerPoint being used widely and regularly. The survey respondents expressed strong interest in learning more about several additional technologies related to video-watching and assignments, course flipping and automated grading of homework. It is not clear whether the direction of the interest in additional training is shaped by the technologies and approaches the survey respondents are most aware of, or whether they established their priorities after weighing a more extensive range of options for technology integration and training.

The CALSTEP website has become a valued source by those who know about it. This raises two questions. One is how to get information about the resource to more potential users, including part-time faculty. The other is how to keep the site updated after CALSTEP sunsets. One option considered by the team is to have each faculty lead assume responsibility for one course curriculum and the associated lab. To increase chances that this will happen, the team may want to create guidelines and timeframes and to clarify expectations.

The team needs to consider whether to try to seek additional support for a SETI 2019 and, if such support is sought, determine how to build in funds to connect past and present participants and to possibly include webinars and a mentoring system.

One instructor who is not teaching at this time indicated he has brought others to his classroom to showcase his use of technology. While this instructor did not express interest in meeting with other technology users, he could potentially be approached as a candidate to serve as a mentor for those starting out with technology applications.

Most survey takers indicated they would be interested in offering CALSTEP online courses to their students to provide access to courses their own college is not offering at all or during some semesters. More research needs to be conducted to investigate which courses would serve as good test cases for such an approach.

Overall, the survey underscored SETI's impact and potential, while at the same time pointing to the need for more follow-up support to assist SETI completers and other technology users in learning the new technologies and how to integrate them into their classrooms. The participation of seven part-time instructors in the survey and the interest that this cohort has in technology and alternative instructional methods is encouraging and should be supported.