

Cal Poly Liberal Studies Program: A Look at the Growing Focus on STEM in Teacher  
Preparation

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**Abstract:**

Teacher preparation at Cal Poly has had a presence on campus since the 1950's. Under the title of Liberal Studies, the program has developed into one of the foremost teacher preparation programs in the state. Part of Liberal Studies' success is from a growing focus on STEM education for teachers both through the curriculum and outside programs. This paper discusses the benefits of the Liberal Studies Department residing under the College of Science and Mathematics and the increased opportunities the program were exposed to after moving from the College of Liberal Arts in 2009.

**Keywords:** teacher preparation, Liberal Studies, STEM, College of Science and Math

**Introduction**

Cal Poly has offered students teacher training courses since the 1940-1941 school year. In the 1947-1948 school year, Cal Poly began to offer classes in a coherent course for the purpose of obtaining a credential to teach. Since then, the program has grown into an official major, now known as Liberal Studies. The program design has shifted over time, beginning as a teacher training program for students looking into secondary education (high school and college subjects), moving toward what it is now: "...a program leading to enrollment in a multiple subject credential program."<sup>1</sup>

As Cal Poly grew and began to establish smaller colleges under the broader umbrella of the university, the Liberal Studies major was placed into the College of Liberal Arts. The College of Liberal Arts focuses on "the arts, humanities, communications and social sciences."<sup>2</sup> However, as a polytechnic university, members of the administration believed the Liberal Studies department would be better suited for the College of Science and Math. In the summer of 2009, the program was officially moved from the College of Liberal Arts to the College of Science and Math.

My argument regarding the Liberal Studies program at Cal Poly can be related to a broader context of teacher training both in California and throughout the nation. The state and national educational standards are constantly changing and the teacher training programs must both keep up with current standards as well as prepare future teachers for potentially more technology and STEM-centered standards. The shift the Liberal Studies program at Cal Poly could mirror shifts other teacher training specific programs at other schools could make. In the

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<sup>1</sup> California Polytechnic State University, "Cal Poly Liberal Studies: About Us," *Cal Poly Liberal Studies*, December 1, 2017, 1, accessed February 5, 2018, <https://liberalstudies.calpoly.edu/content/about-us/index>.

<sup>2</sup> "Cal Poly College of Liberal Arts: Mission and Vision," *Cal Poly College of Liberal Arts*, December 1, 2017, accessed February 5, 2018, <https://cla.calpoly.edu/mission>.

state of California, the Cal Poly Liberal Studies program is the only one under a math and science college.<sup>3</sup>

Because undergraduate teacher training programs within science and math programs are uncommon, there has not been much scholarly work on the subject. Scholarly works and reports have been done on the need for science and math teachers in schools, but Cal Poly is unique in its approach to prepare teachers with a greater foundation in STEM education. Many scholarly articles about undergraduate teacher training programs focus on pedagogy, how to teach, whereas Cal Poly's program focuses on the content, what the students will end up teaching.

Scholarly works like those by Katherine Merseth ("The Early History of Case-Based Instruction: Insights for Teacher Education Today")<sup>4</sup> and David Labaree ("On the Nature of Teaching and Teacher Education; Difficult Practices that Look Easy")<sup>5</sup> focus on how to prepare teachers with specific pedagogy, different teaching methods, not the content which teachers will be teaching. According to the Liberal Studies Department chair, Lola Berber-Jimenez, the Liberal Studies program looks to emphasize the content, what students will be teaching, and the pedagogical methods will be taught in the credential program, once the students have mastered the content.<sup>6</sup> This difference between how teachers are trained at Cal Poly versus other schools around the country, is partly cause for the disconnect with scholarly works on teacher training and Cal Poly's methods.

In this paper, I am going to argue that the Liberal Studies program at Cal Poly transitioned from the College of Liberal Arts to the College of Science and Mathematics in 2009

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<sup>3</sup> Phil Bailey and Lola Berber-Jimenez, interview by author, February 14, 2018.

<sup>4</sup> Katherine K. Merseth, "The Early History of Case-Based Instruction: Insights for Teacher Education Today," *Journal of Teacher Education* 42, no. 4 (September 1, 1991).

<sup>5</sup> David F. Labaree, "On the Nature of Teacher Education; Difficult Practices that Look Easy," *Journal of Teacher Education* 51, no. 3 (May 1, 2000).

<sup>6</sup> Bailey and Berber-Jimenez interview.

in order to better support STEM education within Liberal Studies, in response to a shortage of science and math teachers in California and the rest of the United States. I will prove this through interviews with people who were involved in the program's transition, state and national data on STEM education as well as state and national curriculum standards. In turn, I will show how the curriculum within the College of Science and Mathematics prepares for the continuous rise and growth of the STEM fields and technology in schools.

This argument is important because it shows a shift in what it means to be a teacher. In the early days of teaching, the teacher training program at Cal Poly specifically focused on arts and humanities as opposed to the sciences due to less availability of science courses.<sup>7</sup> Now, the teacher training program at Cal Poly, through the Liberal Studies major, has a greater breadth and depth in classes in STEM.<sup>8</sup> In addition, this argument also opens up the discussion for the future of undergraduate teacher training programs and how universities can best prepare teachers to earn their credential and begin teaching. Cal Poly believes the best route, currently, is through greater STEM education and focus on students learning the content before pedagogy.

## History

Cal Poly has had a teacher training program since the 1940 - 1941 catalog year. In these early years, up until the mid-1950s, the program focused on agricultural education for secondary schools.<sup>9</sup> In 1956, Cal Poly expanded its teacher preparation programs to include more than secondary level agricultural teacher training. The elementary education program at Cal Poly was

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<sup>7</sup> California Polytechnic State College, *California State Polytechnic College Bulletin: Catalog Issue 1950-1951* (San Luis Obispo, CA: California Polytechnic School, 1950), 4, 67, accessed February 5, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1048&context=catalogs>.

<sup>8</sup> "2015 - 2017 Liberal Studies Curriculum Sheet", San Luis Obispo: California Polytechnic State University, 1.

<sup>9</sup> California Polytechnic State College, *Bulletin of the California Polytechnic School, A Circular of Information 1940-41* (San Luis Obispo, CA: California Polytechnic School, 1940), accessed February 5, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1036&context=catalogs>.

first introduced in 1956.<sup>10</sup> The program expanded further in the following years with at Bachelor of Education degree first available in the 1957-1958 catalog and expanding even further in 1963-1964 when Master of Arts in education and Teaching Credentials were offered.<sup>11</sup>

The Liberal Studies program that is still in existence today was first established under the College of Human Development and Education in 1970.<sup>12</sup> Under California's Ryan Act of 1970, a new agency separate from the state Department of Education was established: The Commission for Teacher Preparation and Licensing.<sup>13</sup> The commission developed standards for undergraduate teacher training programs in order to adequately prepare students to earn their credential in either primary or secondary education. The Ryan Act influenced the Liberal Studies program, as it was in 1970 at its establishment and as it is today, because the program's curriculum is largely determined by the Commission for Teacher Preparation and Licensing, now the Commission on Teacher Credentialing. For the first fifteen years of the program, the degree had two tracks: one track for teacher preparation, the second track for students who wanted a liberal arts education but were not interested in teaching. In 1986, Liberal Studies officially earned department status

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<sup>10</sup> California Polytechnic State College, *California State Polytechnic College Bulletin: Catalog Issue 1956-1957* (San Luis Obispo, CA: California Polytechnic School, 1956), accessed March 1, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1054&context=catalogs>.

<sup>11</sup> California Polytechnic State College, *California State Polytechnic College Bulletin: Catalog Issue 1963-1964*, (San Luis Obispo, CA: California Polytechnic School, 1963), accessed March 1, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1061&context=catalogs>.

<sup>12</sup> California Polytechnic State College, *California State Polytechnic College Bulletin: Catalog Issue 1970-1971*, (San Luis Obispo, CA: California Polytechnic School, 1970), accessed March 1, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1068&context=catalogs>.

<sup>13</sup> William G. Stryker, "Teacher Preparation Under California's 'Ryan Act'," *English Education* 5, no. 3 (February & March 1974): 165

and joined the newly established School of Professional Studies and Education.<sup>14</sup> However, the department did not offer Liberal Studies-specific classes until the 1992-1994 catalog.<sup>15</sup>

The Liberal Studies program shifted to the College of Liberal Arts from the School of Professional Studies and Education in 1992. Within the College of Liberal Arts, the Liberal Studies program became more specific in its goals to train teachers as opposed to offering multiple tracks within the Liberal Studies degree program. The program remained a Bachelor of Arts degree throughout its time in the College of Liberal Arts.<sup>16</sup>

In the 2009 catalog year, the Liberal Studies program switched from the College of Liberal Arts to the College of Science and Math. With the switch between the colleges, the degree program became a Bachelor of Science, however, the Liberal Studies program maintained its same goals as it had under the College of Liberal Arts. At this point in time, the Liberal Studies program was a fully developed teacher preparation program, leading students into a credential program after earning an undergraduate degree.

### **Liberal Studies Curriculum**

As the goals of Cal Poly's teaching programs shifted and became more focused over time, the curriculum shifted with it. In the early years when Cal Poly only offered agricultural education, the curriculum focused on specifically "teaching methods and agricultural practices".<sup>17</sup> The program did not have a fully developed curriculum as an undergraduate program on its own, rather it was an additional program students could take once they graduated

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<sup>14</sup> California Polytechnic State University, *California State Polytechnic University 1986-1988 Catalog Announcements* (San Luis Obispo, CA: California Polytechnic State University, 1986), accessed March 1, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1077&context=catalogs>.

<sup>15</sup> California Polytechnic State University, *California State Polytechnic University 1992-1994 Catalog Announcements* (San Luis Obispo, CA: California Polytechnic State University, 1992), accessed March 1, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1080&context=catalogs>.

<sup>16</sup> *Catalog Announcements 1992-1994*, 257.

<sup>17</sup> *Circular of Information 1940-1941*, 21.

with a degree in an agricultural field. The teacher training program at Cal Poly expanded to include a Bachelor of Education degree in 1956. The student declared teaching as their major in relation to a specific subject and took, for a majority of the time, classes in their chosen subject. The classes were not teaching major specific until their graduate year which included seminars in “Educational Psychology” and “Curriculum and Methods in [the chosen subject].”<sup>18</sup> The latter half of the 20th century brought broader curriculum to Cal Poly’s various teacher training programs. The Commission on Teacher Credentialing, required teacher training programs to provide in-classroom work experience.<sup>19</sup> However, the teacher training-specific programs in the undergraduate sector did not appear until Liberal Studies was created as a major in 1986.

The curriculum in 1986 noted a shift in the teacher training curriculum. The students no longer chose a specific subject to concentrate in, but chose a credential or non-credential path. The credential path gave students the requirements necessary to move into the graduate education program. The non-credential path did not fulfill credential requirements but would fulfill the Liberal Studies bachelor of arts degree.<sup>20</sup> The curriculum for the credential path consisted of classes from a wide variety of subjects in the first three years. In the fourth year, the curriculum was solely upper-division education classes. Most of the classes students were required to take were liberal arts subjects like English, History and Art. Of the 53 classes listed in the credential path curriculum, 11 were Science, Technology or Math classes.<sup>21</sup>

In 1992, when Liberal Studies moved to the School of Liberal Arts and first offered major specific classes, the curriculum required six Science, Technology or Math classes. The

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<sup>18</sup> *Catalog Issue 1956-1957*, 48.

<sup>19</sup> Stryker, 166.

<sup>20</sup> *Catalog Announcements 1986-1988*, 308-310.

<sup>21</sup> *Catalog Announcements 1986-1988*, 308-310.

General Education requirements included seven more Science, Technology or Math classes.<sup>22</sup>

The decrease in the STEM part of Liberal Studies curriculum, outside of General Education courses, shows how the program put a greater importance on liberal arts classes. This emphasis on subjects like English, History and Art did not subside until 1999 when Cal Poly introduced a blended degree program. Students in the credential track could get both their bachelor degree and their credential in 13 academic quarters (four years and one quarter). This program aimed to get more teachers in the workforce, especially in science and math because of a shortage of STEM teachers in California and the nation.<sup>23</sup> The 1999 curriculum required 11 STEM courses, which did not include potential STEM classes from the students' chosen area of emphasis.

The 2009 catalog presented a new curriculum for the Liberal Studies program. After the program's switch to the College of Science and Math from the College Liberal Arts, the blended program was dropped. However, this did not correlate to a decrease in the amount of STEM classes required within the major. The curriculum included 11 STEM courses and the option to concentrate in different STEM areas like Kinesiology, Life and Physical Science, and Math.<sup>24</sup> The curriculum within the STEM classes students took were focused on state and national standards at the time, and being able to teach students through these standards.

Since 1992, the year the Liberal Studies program moved into the School of Liberal Arts, the science standards in California have only been updated once: in 1998.<sup>25</sup> Since then, the science classes in the Liberal Studies major follow not only these standards, but also prepare the

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<sup>22</sup> *Catalog Announcements 1992-1994*, 257.

<sup>23</sup> California Polytechnic State University, *California State Polytechnic University 1999-2000 Catalog* (San Luis Obispo, CA: California Polytechnic State University, 1999), 235, accessed March 1, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1084&context=catalogs>.

<sup>24</sup> California Polytechnic State University, *California Polytechnic State University 2009-2011 Catalog* (San Luis Obispo, CA: California Polytechnic State University, 2009), 264, accessed March 1, 2018, <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1089&context=catalogs>.

<sup>25</sup> Next Generation Science Standards Lead States, "California," <https://www.nextgenscience.org/California>, accessed March 02, 2018.



students for teaching future standards that California is expected to implement, the Next Generation Science Standards. California adopted a new set of math standards in 2010 under the United States Common Core initiative. The Liberal Studies-specific math classes focus on teaching students methods of teaching math using the Common Core standards. The Liberal Studies program initiative to prepare teachers in STEM education is shown through the program's forethought in teaching students on STEM standards that may soon be adopted in addition to the current standards.

### **Switching Colleges: College of Liberal Arts to College of Science and Math**

In December of 2008, Provost Robert Koob had a meeting with Phil Bailey, the dean of the College of Science and Mathematics, where he told Dean Bailey that the College of Science and Mathematics would be absorbing the College of Education and the Liberal Studies program. The College of Education, which is a post baccalaureate program at Cal Poly, was having financial problems. The College of Science and Mathematics had the budget to take in the College of Education and help them with their financial problems. Liberal Studies, the undergraduate teacher preparation program, was to come to the College of Science and Math as well because Koob felt it "made sense" to keep the undergraduate and postgraduate education programs together.<sup>26</sup> In January 2009, Dean Bailey held a faculty meeting to announce the move of the school and major.

Not much public discussion went into the decision. After the December 2008 meeting between Provost Koob and Dean Bailey, Provost Koob reported in an Academic Senate meeting on January 20, 2009, that there would be an "administrative realignment". The realignment would

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<sup>26</sup> Bailey and Berber-Jimenez interview.

be official on July 1, 2009 unless there was any strong protests to the switch.<sup>27</sup> The process for moving the College of Education and the Liberal Studies Department was unusual for a realignment of this magnitude. Generally, the Academic Senate would have to vote on and approve of the move before any action was taken. The avoidance of traditional administrative processes in this realignment show the immediate need for moving the College of Education and the Liberal Studies Department as well as the belief that this move would ultimately have greater benefit to both programs.

Besides the financial reasons to switch colleges, the College of Science and Mathematics presented new opportunities for the Liberal Studies program. In an interview with Dean emeritus Phil Bailey, he mentioned how, in his opinion, it makes more sense within the framework of the polytechnic school, to train teachers with greater exposure to STEM, exposure that may not have been there in the College of Liberal Arts.<sup>28</sup> Furthermore, as a polytechnic school, if the Liberal Studies program and School of Education were looking to recruit more teachers in STEM, the College of Science and Math would create a better platform for recruitment of those future teachers.

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<sup>27</sup> *Minutes of the Academic Senate, Tuesday, January 20, 2009*, California Polytechnic State University. San Luis Obispo, CA: California Polytechnic State University, 2009.

<sup>28</sup> Bailey and Berber-Jimenez interview.

## How Cal Poly's Program is Unique

Since the Liberal Studies program's switch into the College of Science and Mathematics, there has been an increase in students concentrating in STEM subjects. According to the Liberal Studies department chair, Lola Berber-Jimenez, since the switch between colleges, she has noticed "less STEM fear", or fewer students who feel intimidated by STEM subjects.<sup>29</sup> This decrease in STEM fear can be seen through the amount of students enrolled in each concentration. Currently, the number of students enrolled in STEM concentrations, excluding the graduating class, is 42. There are seven Biology concentrations, 21 Math concentrations and 14 General Science concentrations. Of the 71 students in Liberal Studies' 2018 graduating class, 26 students are in STEM concentrations; four in Biology, seven in Math, and 15 in General Science.<sup>30</sup> To have about one-third of students enroll in concentrations in STEM fields shows the effectiveness of the increased exposure to STEM classes and outside opportunities on the Liberal Studies student body.

Being in the College of Science and Mathematics allows Liberal Studies students greater exposure and opportunities to interact with STEM activities outside of the assigned curriculum. The College of Science and Math established CESAME: Center for Engineering, Science and Math Education in order to "improve P-12 science and mathematics teacher recruitment, education, development and retention" before the Liberal Studies program was a major within the college.<sup>31</sup> With the Liberal Studies program in the College of Science and Math, the students within the program have greater access to and knowledge of the CESAME program - the office is even in the same wing as the Liberal Studies Department.

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<sup>29</sup> Bailey and Berber-Jimenez interview.

<sup>30</sup> Lola Berber-Jimenez, e-mail message to author, March 05, 2018.

<sup>31</sup> "Vision and Goals," CESAME, <https://cesame.calpoly.edu/content/vision-and-goals>, accessed March 05, 2018.

Another opportunity Liberal Studies students have to apply and grow their education in STEM is through a programs like TeAMS (Teacher Assistant in Mathematics and Science), MOST (Mentors in Out-of-School Time), and COSIA (Communicating Ocean Sciences to Informal Audiences). Each of these programs, run by the College of Science and Mathematics, allows students to apply STEM knowledge to K-12 students. The programs are open to all majors within the College of Science and Mathematics, so the Liberal Studies program, being in the College of Science and Mathematics, has greater exposure to these programs than if the program was in the College of Liberal Arts.

More recently, Liberal Studies students had opportunities to do research over the summer through the Frost Fund. The Frost Fund is a \$110 million dollar donation from William Frost to the College of Science and Mathematics for undergraduate research.<sup>32</sup> The Frost Fund benefits all majors within the College of Science and Mathematics, including Liberal Studies. The fund creates more research opportunities in various STEM fields, including astronomy and chemistry, for Liberal Studies students. In the summer of 2017, three Liberal Studies students participated in research funded by the donation.<sup>33</sup> The Liberal Studies students, while in the College of Liberal Arts, would not have had this opportunity to perform scientific research to expand their STEM education, focusing in content not pedagogy.

### **Comparison To Other Programs: San Francisco State University**

Similar to Cal Poly, San Francisco State University has a long tradition and history of teacher preparation at the university. Because SFSU is also part of the CSU system, the Liberal Studies program there must meet similar standards to the program at Cal Poly. The Liberal

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<sup>32</sup> "Cal Poly Receives CSU-Record \$110M Gift from Alumnus William L. Frost," *Cal Poly News*, May 2017.

<sup>33</sup> Bailey and Berber-Jimenez interview.

Studies program at San Francisco State University belongs to the School of Humanities and Liberal Studies under the College of Liberal and Creative Arts.<sup>34</sup> The goals of the Liberal Studies program at San Francisco State are similar to the goals of Cal Poly's program; however, the program is formatted similarly to how Cal Poly's Liberal Studies program was from 1986 to the mid-1990s. The program prepares students primarily for teaching, but at SF State, the student must concentrate in the Teacher Preparation path in order to fulfill all the requirements for a credential program.<sup>35</sup> Other than the Teacher Preparation path, there are other concentration paths students can choose from which are subject focused.<sup>36</sup> In the Teacher Preparation path, students are required to take two math classes and must choose three classes from a list of seven classes, only one of which is a class in STEM.<sup>37</sup> Of the "core courses" in Liberal Studies program, students are required to take eight classes (outside of two graduation requirement courses), two of which are STEM classes: Life Science and Physical Science.<sup>38</sup> Within the Liberal Studies major, students are not required to take Math, unlike Cal Poly, where students take 20 units of Math. Furthermore, there is much less science required within the major itself compared to Cal Poly. The Liberal Studies students at Cal Poly are required to take 24 units of science.<sup>39</sup>

Cal Poly's program is unique compared to the program at San Francisco State as well as programs throughout the state of California because it is the only Liberal Studies program

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<sup>34</sup> "School of Humanities and Liberal Studies: College of Liberal and Creative Arts" <http://humanitiesliberalstudies.sfsu.edu/>, accessed March 05, 2018.

<sup>35</sup> "Bachelor of Arts in Liberal Studies," School of Humanities and Liberal Studies, <http://humanitiesliberalstudies.sfsu.edu/bachelor-arts-liberal-studies>, accessed March 05, 2018.

<sup>36</sup> "Liberal Studies Emphasis Patterns," School of Humanities and Liberal Studies, <http://humanitiesliberalstudies.sfsu.edu/liberal-studies-emphasis#otheremphasis>, accessed March 05, 2018.

<sup>37</sup> "Liberal Studies Emphasis Patterns".

<sup>38</sup> "Bachelor of Arts in Liberal Studies".

<sup>39</sup> *2015 - 2017 Liberal Studies Curriculum Sheet*, <http://flowcharts.calpoly.edu/downloads/curric/15-17.Liberal%20Studies.pdf>, updated October 4, 2016.

operating under a Science and Mathematics college.<sup>40</sup> The influence the College of Science and Mathematics has on the Liberal Studies program at Cal Poly separates it from other Liberal Studies programs in the state. The Liberal Studies students at Cal Poly have much greater exposure and opportunities in STEM education, even when a student does not concentrate in a STEM subject because it is in the College of Science and Mathematics, whereas at other universities, like San Francisco State, to be exposed to similar opportunities, the student would most likely have to concentrate in a STEM subject area.

## **Conclusion**

Initially, the decision to switch the Liberal Studies program from the College of Liberal Arts to the College of Science and Mathematics was a solution to a fiscal problem within the College of Education (now the School of Education within the College of Science and Mathematics). However, the fiscal decision turned out to benefit the education of the students within the Liberal Studies program by giving them more opportunities and exposure to science, technology, engineering and mathematics activities and experiences which can supplement the classes the students are already required to take.

California, and the United States, experienced a teacher shortage in the early 2000s, especially in subjects related to science and math. The Liberal Studies program attempted to recruit more students to concentrate in science and math subject areas through the creation of a blended program which allowed to students to receive both a Bachelor of Arts degree and a credential in 13 quarters, but recruiting students to become teachers in STEM was more successful once the program switched into the College of Science and Mathematics in 2009. The department chair for Liberal Studies, Lola Berber-Jimenez, noted an increase in STEM

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<sup>40</sup> Russell Swanagon, interview by author, March 1, 2018.

concentrations over the years since 2009, and has even noticed less students shying away from STEM classes. The Dean Emeritus of the College of Science and Mathematics, Phil Bailey, added that the Liberal Studies program under the College of Science and Mathematics has thrived because it “makes more sense within the framework of a polytechnic, like Cal Poly.”<sup>41</sup> Because Cal Poly heavily focuses on STEM subjects, the Liberal Studies program should benefit from the strengths of the polytechnic, instead of not using all the resources the polytechnic framework has to offer. Liberal Studies professor Russell Swanagon commented on how the switch to the College of Science and Mathematics benefited the program because there was increased and more clear interactions with programs under the college like CESAME.<sup>42</sup>

While the Liberal Studies program has made a concerted effort to increase the influence of STEM for students in the program, the department is continuing to expand STEM opportunities. Beginning the 2018-2019 school year, a new concentration in Computer Science will be available. Additionally, the Frost Fund is expanding its openings for Liberal Studies students specifically. Last year, three Liberal Studies students participated in research funded by the Frost Fund, but Phil Bailey expects that number to grow in the next years.<sup>43</sup> The Liberal Studies program’s focus on STEM education for their teachers-in-training will benefit the students they teach in the future. Even though many Liberal Studies students will ultimately become elementary school teachers, the exposure to STEM in Liberal Studies program at Cal Poly will allow these future teachers to bring more science, technology, engineering and math skills into their classrooms.

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<sup>42</sup> Swanagon interview.

<sup>43</sup> Bailey and Berber-Jimenez interview.

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