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The STEM-Missionary Connection for Hope Women

By Maria Seidl



Hope College was originally a men's college founded on classical and biblical training.¹ This included the study of English, Greek, and Latin. Although Hope College's emphasis on classical training was reflective of national trends at the time, its emphasis on science and math was less common. Science was highly regarded at Hope, though the discipline was newer.^{2,3} From the founding of Hope College, science was not seen to be contradictory to religion, but rather complementary. Through our research, we have found that a significant minority of women at Hope majored in STEM (Science, Technology, Engineering and Math) from 1925-1950, and that of those a significant amount seem to have become missionaries.

As our research team considered the lives of women at Hope from 1925-1950, an important facet for us to research were trends regarding enrollment and majors. However, a major obstacle that we encountered was a lack of compiled information on chosen majors at Hope College. Therefore, I had to gather this data myself. Using the Hope College *Milestones* from 1925-1950, I tabulated the listed majors for women in the senior classes. Afterwards, I pulled lists of available majors and enrollment data from the yearly bulletins, the equivalent of a modern course catalog. We had to use senior student listings to count majors, and therefore our

data does not include women who started a STEM major but did not stay in it until senior year. We are missing those students who changed majors out of STEM or who left the college before senior year. Therefore, we have a gap in data on women of color or lower socio-economic statuses, retention, and attrition rates. Moreover, there is no data for 1931, 1933, and 1941 as there were no *Milestones* or data on majors for the senior class.

Though most women at Hope College from 1925-1950 majored in the humanities or fine arts departments, a significant proportion majored in STEM. Given that Hope was created to prepare students for teaching, missionary work, and ministry, this finding seemed

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From The Dean

In the last newsletter we recognized the retirement of Geoffrey Reynolds, long time Director of the Joint Archives. Now we also must say goodbye to Lori Trethewey, Office Manager of the Joint Archives. After 29 years at Hope College, Lori will retire on August 19. Lori began in the President's Office in 1993 and then joined the staff at the Joint Archives in 1996. A steady presence, Lori will be greatly missed. In addition to her many office tasks and keeping the doors of the Theil Research Center open, she was often the contact for researchers from around the world, connecting them with items in the archival collections, publishing this newsletter and faithfully archiving the minutes of Hope College boards and committees. Lori and her husband, Mike, have purchased a home in Temple, Texas, where they will be near their five grandchildren. All best wishes to Lori as she enjoys warmer weather and closer connections with family.

This summer we were exceptionally fortunate to hire Sarah Lundy (class of 2019) as a Collections Archivist. Sarah obtained her Master of Science in

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From the Collections Archivist



Several years ago, as a student at Hope College and an intern at the Joint Archives of Holland, I was introduced to the world of archives and special collections, the stories of Holland, and the broader communities around Hope. Working with collections at the archives cultivated my interests in both local history and

digital preservation, and that experience encouraged me to consider a career in library science. This July, I was delighted to return to Holland, Hope, and the JAH as the Collections Archivist. I have received such a warm welcome already, and I look forward to continuing to grow the archives and engage with the community.

The archives' legacy of community engagement and scholarship, made possible thanks to the moral, research, and financial support that so many of you contribute, creates ongoing opportunity for student projects. Prompted by the desire to know what Hope College looked like for women when men left during World War II, Maria Seidl and her classmates, Grace Pettinger and Brooke Carbaugh, spent the summer of 2021 researching at the Joint Archives of Holland (funded by the John H. Dryfhout '64 Research Grant). In this issue, you will find Maria's contribution to that project, an article about female students majoring in STEM fields. We hope that it provides a window into Holland's past and sparks your interest in a lesser-known piece of Hope's history.

Sarah Lundy

Stem-Missionary Connection (continued from page 1)

unusual at first glance.⁴ The first reason why this seemed unusual was because STEM departments at Hope were newer and less established. Moreover, STEM did not seem to directly correlate with any of the fields that Hope was meant to prepare students for. Lastly, given that women in STEM are still a minority, it seemed to be progressive for 26.32% of female seniors at Hope College in 1934 to have majored in STEM.

Once on campus, a significant minority of women gravitated towards STEM majors. By 1925, three out of eighteen women (16.67%) in the senior class majored in STEM, with one student in science and two in math. The two years with the highest STEM enrollment were in 1934 and 1947. The years with the lowest portion of women who majored in STEM were 1937 and 1943. There is no data available for 1931, 1933, and 1941.

Until 1939, science and mathematics were the only two courses that women majored in within STEM. These two majors are some of the oldest at Hope and contained broad possibilities depending on the resources of the

school at the time. If there were more resources, then there were more classes and disciplines available for students to study in. Mathematics still remains a popular major at Hope though general science majors were less common after 1947, as students now major in specific science fields. In general, science and mathematics were the most popular STEM courses for all students at Hope from 1925-1950s, even after new departments were created, though some men also majored in chemistry, physics, and pre-medical.

Chemistry was first listed as a student's major in the 1936 *Milestone* and the major soon increased in popularity. The first time that women majored in chemistry was in 1945 when two out of nine women in STEM majored in chemistry. Chemistry was consistently chosen by a few (one to three) women each year until 1950 when no women majored in it. Similarly, biology was first listed as a student's major in the 1939 *Milestone* and the major grew exponentially in the years after. A significant proportion of women in STEM, three out of the seven female students, majored in biology. For every year after that, at least one woman majored in STEM, with 1943 as the exception.

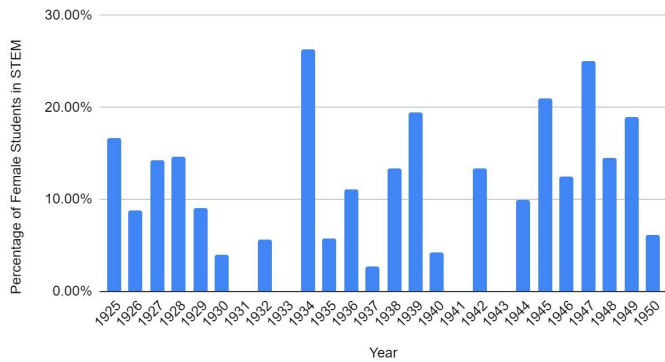
The pre-medical track was offered in 1925 as individual courses, but female students first picked it as a major in 1938, when two out of six women in STEM took a pre-medical course. Only one other woman was a pre-medical major from 1925-1950; she was a senior in 1945. According to the 1945 course catalog, the four-year pre-medical curriculum had been available to "pre-medical students at Hope College for some time" and was designed to meet the most "rigid requirements of medical schools."⁵ Though only these two women listed pre-medical track in the *Milestone*, some archival files list pre-medical when the *Milestone* does not, showing that pre-medical track may have been followed by some without declaring it a major, similar to how the pre-medical track works today.



Hope College Scalpel Club, 1946

In 1945, nursing was available for the first time to students. Our data only accounted for two cohorts of seniors (1949 and 1950) that could have majored in it, because the only data on majors available was from

Female Students in STEM from 1925-1950



seniors. Regardless, no senior women were recorded as having majored in nursing in 1949 or 1950. Similarly, pre-forestry and pre-dental tracks were offered for the first time in 1945 and no women were recorded as having majored in either during the scope of this project.⁶

Two glaring omissions are the “T” and “E” in STEM - technology and engineering. Technology, mostly comprised of computer science and information technology majors, is a fairly recent field and career path. Therefore, no women within the scope of our project majored in technology. Engineering was offered during our study, though not until 1942, and no women majored in engineering during the duration of our study.⁷ Other common majors that would fall under the STEM umbrella term are geology, physics, algebra, geometry, and statistics. Physics is the only course that was offered during this time period and no women majored in it. The other disciplines were not available to Hope students to major in.

While researching women who majored in science, technology, engineering, and mathematics at Hope College from 1925-1950, there was a noticeable amount of students who entered the missionary field after graduating. This makes sense given that science and classical training were perceived to be dichotomous in the United States. Classical training was masculine and prepared men for the public sphere. Science was not as explicitly linked to gender. However, females and science were implicitly linked as science education was utilized by many female seminaries to teach “critical observation and... logical thought.”⁸ Classical training was not seen as essential for future female careers since they were most often entering the private sphere.

It is important to acknowledge that the findings of this research are inherently biased. In an attempt to try to find more information on the women who majored in STEM at Hope from 1925-1950, I cross-referenced the names from the *Milestone* with records at the Joint Archives of Holland. Out of the 951 women recorded, only a small portion of them had files in the Archives. It was more likely that there would be information on them if they were a part of an established Dutch family in Holland. The archives had many files on these women’s

husbands, but rarely information on them. Of the women that did have files, most were prominent missionaries for the Reformed Church of America.

Missionary work during this time period was founded upon gendered separation and the idea of the “private sphere” as the woman’s domain. Women were seen as inherently pious and religious with special skills in nurturing and teaching.⁹ Serving as a missionary complimented women’s perceived influence over religion and the family. Only eight of the 951 women who majored in STEM during this time period (1925-1950) at Hope had files in the Joint Archives of Holland. Of the eight, seven were missionaries. Of that seven, three of them had parents who were missionaries and were raised to enter the field. Those women were Anne De Young, Mary Louise Talman, and Marjorie Van Vranken. Two of them, Helen Zander and Alida J. Kloosterman, decided to become missionaries through religious communities. Women were instrumental in recruiting, retaining, and becoming missionaries.

STEM was a logical primer for missionary work because it allowed women to take a pre-medical track and obtain education in nursing. While none of these women have a pre-medical track specified in the *Milestone*, a few of them specified that they took a pre-medical track in their archival files. This means that the women who majored in STEM might also have taken pre-medical tracks even though that is not noted in my data.



Eva Van Schaack, 1929

Of the eight women that have files in the Joint Archives of Holland, four were nurses while serving abroad. The other four women were not employed in the medical field but, instead, specialized in education. Eva Van Schaack was the only woman who majored in STEM during this period with an archival file who did not become a missionary. She worked as an associate professor and professor at Hope College in the biology department.¹⁰

Moreover, missionary work was deeply interwoven with Hope College and its relationship with the Reformed Church of America. According to the Hope College 1916 semi-centennial catalog, the founding of the school had a clear connection to missionary work. The catalog explicitly states:

They wanted a Christian school to prepare, in a general way, for high grade American citizenship and the intelligent development of Christian character; but, more specifically, they wanted a school to serve the three-fold purpose— to equip competent teachers, to train ministers, and to prepare missionaries for the foreign field.¹¹

This statement hints at the college's long-standing mutualistic relationship with the Reformed Church of America (RCA). Dennis Voskuil, a scholar and interim president at Hope College, argues that the RCA supplied resources for the college and, in return, the college supplied people.¹² This can be seen in the college course bulletin as the college emphasized prerequisites for seminary training and Christian ministry (which included science). Voskuil also argues that Hope College was valued by the RCA because of the volume of missionaries coming out of the school. By 1941, over one third of Hope College alumni were missionaries (2,300 people). In 1926, out of 1,410 graduates, 60% were religious workers.¹³

The American Board of Commissioners for Foreign Missions (ABCFM) was a major Protestant organization sending missionaries abroad. Even now, much of the missionary movement in the United States can be tied back to the ABCFM. Initially, women could only go abroad if they were wives of male missionaries.¹⁴ Many women married in part because it was the most accessible pathway abroad. However, this changed in the 1830s as the ABCFM became desperate for missionaries. According to the *Historical Dictionary of Women's Education in the United States*, this policy change resulted in "hundreds of unmarried women" finding employment as assistant missionaries and going abroad.¹⁵ By 1880, women represented 57 percent of the missionary force.¹⁶

Moreover, these women may have become missionaries because of the clear alternative to marriage and child-rearing that the Church provided. Women no longer had to be married or mothers in order to live abroad and have careers. The Church has a history of providing a certain amount of independence to women through positions as nuns, missionaries, and other religious work. Therefore, missionary work could have been correlated with STEM, as well as other potential factors relating to marriage, motherhood, and family.



Jeanette Veldman, n.d.

An interesting trend became apparent while analyzing these women's files - most of them obtained some form of higher education. Out of eight women, seven (87.5%) obtained some form of further educational attainment. Eva Van Schaack and Bernadine Siebers De Valois both received doctorates, though Siebers De Valois' was an honorary degree from Hope College.¹⁷ Van Schaack obtained a PhD from John Hopkins University.¹⁸ Helen Zander attended Columbia University and

got an M.A. degree in rural education with emphasis on industrial arts after taking a furlough in 1940.¹⁹ Mary Louise Talman received an M.A. from Albany State

Teacher's College in 1944.²⁰ Marjorie Van Vranken got a master's degree in physiology from the University of Illinois in 1949.²¹ Lastly, Bernadine Siebers De Valois obtained a M.D. in 1936 while specializing as an E.N.T.²² It is not clear what degrees Jeanette Veldman obtained but she attended a school of nursing, a school of midwifery, and a teachers college.²³

Though the sample size is small, the proportion of women who majored in STEM and received higher degrees after college is noteworthy. In the late 1800s and early 1900s, the professionalization of science pushed many women from the field. Women found barriers blocking them from graduate school, gaining doctorates, and getting jobs in equal value to their level of training. Some women were able to obtain entrance into colleges through attending women's colleges, taking advantage of quotas in co-ed colleges, finding advocates on their behalf, or moving to Europe. Still, most women found themselves at the margins of science and the women who had gained entry in the field were the minority. These degrees in fields like "rural education," may have especially been on the margins.

Nevertheless, women still pushed for space in education and science. Prior to 1900, nearly 30 percent of doctorates earned by women were in the sciences. By 1900, American women had earned 229 doctorates and at least 60% of the doctorates were in the sciences. However, women scientists lacked employment opportunities unless they found employment at a women's college. If they did find employment at a college, they were typically valued as teachers over researchers. Government and industrial employment followed this same pattern of valuing teaching over researching which further marginalized female scientists. By the mid-twentieth century, land-grant institutions became significant employers of female scientists rather than just women's colleges.²⁴

Though these eight women from Hope College majored and obtained advanced degrees in STEM, most of their career trajectories followed the pattern described above, as they became employed as teachers. Helen Zander, Mary Louise Talman, Eva Van Schaack, and Alida J. Kloosterman found teaching as their primary employment.

Helen Zander specialized in English and stenography. Mary Louise Talman taught general science. There is no information on what Alida J. Kloosterman specialized in. Eva Van Schaack is the anomaly in that she obtained a doctorate, taught, and researched - though it is noted in her file that she did less research than other professors in her department.



Eva Van Schaack, Hope College biology professor, 1968

Meanwhile, Jeanette Veldman, Anne De Young, Marjorie Van Vranken, and Bernadine Siebers De Valois found their primary employment in the health field. Regardless, teaching became an important part of their vocations as they trained future health professionals and locals. Bernadine Siebers De Valois, a practicing surgeon and doctor, emphasized the importance of education in both preventative and reactive health interventions. Her method emphasized educating mothers and caretakers in order to influence domestic life. This pattern is significant not because of an unimportance of teaching degrees, but rather because it contributed to the lack of female research scientists. Teaching has been historically feminized and women rarely achieved higher positions. Even highly trained and degreed women in STEM rarely purely stayed in STEM. Teaching was a clear vocational route when employment for women had many barriers.



Bernadine Siebers De Valois, n.d.

World War II gave women job opportunities as the men went off to war and positions opened up. However, as can be seen by these women's stories, this change was not inherently lasting after the war. The veterans came back and entered higher education in large amounts and reclaimed their positions. The 1950s introduced a need for "scientific womanpower" during the Cold War as the United States' technological weaknesses were shown. Women were an untapped resource of trained, educated, and willing workers. Still, the national rhetoric "never matched the reality of women's employment opportunities."²⁵ Eventually, the Civil Rights and Feminist movements made gains for women's rights. However, this is an issue still relevant today inside and outside of STEM.

For more information on women in STEM at Hope and women at Hope during the 1930s and 1940s, please visit our website: <https://hopewomen.hopedla.org/hope-women>. Our research team has worked hard to create a platform to allow readers to interact with our findings.



About the author:

Maria Seidl recently graduated from Hope College with double majors in History and Sociology. Maria currently works as the Coalition Specialist for Arbor Circle and plans to enroll in graduate school for her LMSW. In her spare time, Maria enjoys visiting her Grandma's farm, crocheting, and making coffee.

Endnotes

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From the Dean (continued from page 1)

Information with a specialization in Digital Archives, Library Science and Preservation from the University of Michigan. She interned at the Library of Congress, the Archives of Michigan, and the UM Stephen S. Clark Library as well as at the Joint Archives. She was a teaching assistant and researcher for several Hope College professors including in the History Department, the English Department and the French Department, was a Mellon Scholar and worked at the Klooster Center for Excellence in Writing. Sarah will continue to process archival records, work with donors, teach classes and lead the college's records management program. Please welcome Sarah when you get the opportunity.

Kelly Gordon Jacobsma, Dean of Libraries

The Joint Archives of Holland



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Hope College students and faculty member in class, ca. 1950s