In 2020—2021 London South Bank University celebrated 100 years of encouraging women to study engineering subjects. The project not only helped us to find a lot more about the history of the institution and some of our former students and staff, but also highlighted some common themes in researching women’s history and brought out some fascinating stories.

The project started when Dr Claire Benson, a lecturer in chemical engineering, asked the archives if it was true that LSBU was the first university to teach women engineering. The answer to that question was no, it wasn’t! But we wanted to try and find out a bit more about this local urban myth, which had a rough date of “just after WW1”, so began by hunting through our exam registers to see if I could find any women listed as having studied engineering – and found one! That gave us a date of 1920-21, and so the centenary project was born. We decided that we’d draft up a series of profiles of women who were involved with engineering at LSBU, one for each decade, which could live on the website and showcase a range of careers and indeed issues women had had in the workplace.

LSBU was founded as the Borough Polytechnic and opened in 1892. Our first prospectus[[1]](#footnote-1) gives our initial purpose:

*The Object of the classes is to provide sound instruction for Young Men and Women residing in and about south London; thus promoting Industrial Skill and General Knowledge…*

The Borough Polytechnic was definitely founded with an intent to educate both men and women, although the subjects and skills training offered were slightly more gendered. Women’s training for trade tended to cover things like dress-making and laundry, and it was subjects like languages which were available to everyone.

In 1919 the Women’s Engineering Society asked the Polytechnic if it would admit women to our full time engineering courses. At that time the Board of Governors said no[[2]](#footnote-2), but women who were working or had worked in engineering were to be admitted to the evening classes on the same basis as men. And so in 1920 the women’s department advertised that women could study subjects in other departments, including engineering[[3]](#footnote-3).

There was one woman in that class, the woman who kicked off tis whole project! Her name was Ida Bould and - very satisfyingly - she got the highest average mark in the class. The exam register shows that there were 70 people in the class in total, which is a great, and somewhat sobering demonstration of what some of these women were up against.

Ten years later, in 1930, the Polytechnic listened to the Women’s Engineering Society and started to offer Engineering for Women[[4]](#footnote-4), which was a simplified course taught separately. It is difficult to get exact figures for how many women studied this, as the annual reports and our exam registers do not give exactly the same figures and some more research is necessary to try and establish if perhaps some women took the class but not the exams.

After a year it was decided to stop segregating the classes and to teach women alongside the men, albeit with a smaller set of subjects. Also in 1930 we started offering Electricity in the Home[[5]](#footnote-5), which was essentially electrical engineering for women to enable them to deal with their own electrics at home and also to work in demonstrating electrical appliances. During the 1920s we also offered a course in Household Jobbing, which was essentially DIY for women, so there was a real increase in practical skills courses for women outside what could be seen as the traditional household skills.

We wanted to find some more information about the women who studied with us, and the only way we could do that was by going through our exam registers. Early student records haven’t survived so trawling these registers was the best way of identifying some of the women. This was a fairly time consuming job, which was helped by a graduate intern and by colleagues, and we eventually pulled together a spreadsheet of women who did engineering and engineering related subjects, with relevant dates and any additional information like prizes.

This graph shows the trends in studying for the first fifty years we taught women engineering subjects. It is very rough and only meant to be indicative of numbers - the subjects are slightly vaguely classified to make it a little easier to quantify, so some of the women who were studying television might have been a bit puzzled to realise that they are counted as Electrical Engineering. There was a high point for engineering drawing in 1939/40 - that was our “lady tracers” course, which gradually petered out as engineering drawing stopped being taken as a standalone subject. It still formed part of courses, but because the wider subject being studied was mechanical or electrical engineering then the students are counted under those instead. You can also see that some years had no women at all, which was a slightly dispiriting finding during the research.

 

Once we’d been through all of the registers, we then had to try and find out more about some of these women and see if we could discover anything else about their careers. The first step for trying to find out about the women was to use family history websites to try and clarify dates of birth and family details. Information on family was easier for the earlier students, as the 1901 and 1911 censuses were available. We also went through all our prospectuses to try and establish when we had women teaching engineering. When that research was concluded we drew up a shortlist of potential profiles, then picked the women we either thought were most representative, or (if I'm honest) were easiest to trace!

Our full list of profiles is available here: <https://lsbu.maxarchiveservices.co.uk/lsbu100wec/>

They vary in the amount of detail given, as this kind of project always has the problem that sometimes the information we want simply is not there. Our final profiles were a combination of students and staff, sometimes staff who have also been our students, and were drawn up from a combination of archival research and talking to the women - I am very grateful to all of them for giving up time for the project. If you look at the profiles you will see that the five for the late 20th and early 21st centuries are all in their own words, so I would encourage you to read those instead of them being paraphrased here. The full list includes two Professors, 6 PhDs, one former President of the Women’s Engineering Society, so we’ve got a very eminent group of women!

The first profile we drafted was for our first student, Ida Bould. She was born in Southwark in 1896 after her family moved to London from Derbyshire and was the youngest of 6 children, although by 1911 only 3 were still living. Her father was a millwright and engineer, and in 1901 her older brother Walter was an apprentice engineer so an interest in engineering clearly ran in the family. We don’t know what happened to her after she finished her course and if she was able to work in engineering drawing. In the 1921 census when she was still studying with us, she was a tailoress at the Royal Army Clothing Depot, but was on holiday in Weymouth with Dorothy Alice Goodfellow. In 1933 she was working at the Royal Army Clothing Depot in Pimlico[[6]](#footnote-6), and by 1939 she was living in Wandsworth, working as a stock-keeper (Corsets) and living with Alice M Goodfellow, a Linen Room Superintendent in a hospital. Ida and Alice were still living together in 1957[[7]](#footnote-7), by that time they had moved to Gomshall near Guildford and it seems they later moved to Worthing as they both died there in 1975. Her story is an example of one of the silences in the archives - we don’t know what their relationship was, and it’s difficult to find details of Ida’s working life. The only reason we know where she worked in 1933 is that she is listed in a petition held in Westminster Archives, from staff at the clothing depot, and it gives no further information about her personally.

Our 1930s profile was Madeleine Nobbs, who started taking courses in the academic year 1938-1939. Madeleine later became President of the Women’s Engineering Society (WES) and their journal, The Woman Engineer, has both a summary written by her of her career[[8]](#footnote-8) and an appreciation written after her death in 1970[[9]](#footnote-9). This means that, unlike some of our former students, we know exactly what she did after she finished her studies. When she left school Madeleine started working as a shorthand typist, which she described as “disastrous”. In her article in the Woman Engineer she writes about thinking of the subjects she did well in at school, then reading a book on Technical Drawing which led her to tell her engineer father that she also wanted to be an engineer. His initial reluctance was eventually overcome when he met another woman engineer, and Madeleine was able to get a job as a junior in a heating contractor engineer’s office. Her salary was less than half of her previous salary, but she was allowed a day a week to do a part-time day release course at the Borough Polytechnic – our registers show she won class prizes throughout her time with us. After she finished her studies she was involved in designing air raid shelters, factories and boat ventilation – although restrictions from dockyard authorities, presumably around the presence of women, meant that she wasn’t allowed to inspect ship installations. She later changed firms to get a range of experience before going to her father’s firm as an engineer and then a junior partner. When he died, she took over the firm and became a consultant engineer.

The third profile was for Audrey Buteux, who started taking courses at the Borough Polytechnic in 1948-49, studying Mechanical Engineering, Engineering Drawing and Workshop Technology. She was 20 years old and, somewhat unusually, recently married when she started her studies. Audrey joined the Women’s Engineering Society in 1952, which helps to trace her further career as there are updates in the WES journal, The Woman Engineer. In Spring 1953[[10]](#footnote-10) she was working as a Lab Assistant in the Drawing Office at ICI and was doing an 18 month workshop training programme. Audrey was often the only woman studying in the department. Of the 6 women taking engineering subjects in 1952-53 the other 5 were all studying Electrical Engineering.

Throughout her years of study at the Borough Polytechnic, the only time Audrey was not the sole woman in her class was in her first year. She was only the second woman to gain her ONC in Mechanical Engineering at the Polytechnic, and the third would not be until 1955. The Woman Engineer update from members in Winter 1954[[11]](#footnote-11) not only reported her endorsement but also that she had had a daughter. She later had more children and it seems likely that she stopped working, as there are no more updates in the Women’s Engineering Society records. This highlights some of the difficulties women in engineering (and other industries) faced at that time, as society expectations were often that women would stay home with their children and childcare wasn’t always available. This, in turn, led to these women leaving the industry despite promising careers. The fact that Audrey studied with us after she got married actually made it easier to trace her, as so many women change their names on marriage it can make it much harder to research them.

We have a pretty full career history for our fourth profile, Vera Brew, because she wrote it up in the Woman Engineer in 1970[[12]](#footnote-12)!

Vera was originally from Cumbria and joined the Heating and Ventilating Department of London County Council in 1954 to work as a draughtsman. Her interest in knowing more about the subject led her to evening classes at the Borough Polytechnic and she gained her Ordinary National Certificate in Mechanical Engineering in 1959. Vera then changed job to be a design draughtsman in the Ministry of Public Building and Works, and alongside her new job she returned to the Borough Polytechnic to study for her HNC in Mechanical Engineering. After 8 years with the Ministry, Vera spent a year on a project working for a large project on buildings in the Persian Gulf with £5 million worth air conditioning – although still based in London. This project brought her professional engineer status, but she wanted to stick with the technical side so moved to a job at the North West Metropolitan Hospital Board as the Main Grade Engineer, which is where she was when she wrote the article.

The profile for the 1960s was a kind of archival serendipity, as when we were searching through our prospectuses for female staff we found a name which was familiar from the exam registers short list – Carol Maddex. She was our first woman lecturer in Engineering, starting work in 1963 lecturing in Mechanical Engineering[[13]](#footnote-13). She’d started studying with us in 1958 as a part time student, getting top marks in some classes and winning both class prizes and a prize from the Institute of Mechanical Engineering in 1962. We don’t know what happened to Carol Maddex after she left the Polytechnic – the minutes that tell us who we hired don’t tell us where departing staff were going. We know that Carol was married from searching birth, marriage and death records, although she studied and taught under her own surname rather than her husband’s. Again, that made it easier to trace her career with us and identify her as the same person but did mean we struggled to find any reference to what happened to her afterwards as we can’t work out what name she used.

Professor Agnes Kaposi joined us in 1977, and was the first woman to be head of department for Electrical Engineering. We initally found some information about her from our prospectuses and the minutes of when she was hired, but the bulk of her profile came from her generously giving us the time to interview her. She is an absolutely inspirational woman – she was born in Hungary and came to the UK in 1956 as a refugee and has written a book about her early life called Yellow Star, Red Star which covers her family’s experience firstly in concentration camps, then in Soviet era Hungary. She trained in engineering at the Technical University of Budapest and on coming to the UK she worked in industry and studied for her PhD. Professor Kaposi came to LSBU from Kingston Polytechnic, to a department which sounds like it was quite old-fashioned and rather disorganised. One day a member of her new department joined her for lunch, introduced himself and assured her that it wasn’t anything personal, but that he didn’t believe in working women: the woman’s place is in the home. That attitude seems to have been prevalent, if not quite as pronounced, across the department – many of the academics didn’t necessarily take kindly to having a woman as their boss so she had to manage that alongside the more day to day elements of running a department.

By the time Professor Kaposi decided to leave South Bank, after ten years running the department, there were more than 1000 students of whom 200 were postgraduates. The research school ran projects funded by industry and the European Commission, with candidates studying for MPhil and PhD qualifications. The department had 50 full-time and over 100 part-time staff, 50 technicians and four secretaries. It may well have been the largest engineering department of the country, with possibly the largest graduate school of engineering. Her influence was such that one former member of staff that we also had the opportunity to speak to over the course of the project told us that Professor Kaposi was the reason that she applied to LSBU, and that she was inspirational. That was over 30 years after Professor Kaposi retired from us – please do read her profile for more information.

The remaining profiles were written in a Q&A format, so are only briefly summarised, but give a great overview of careers in engineering over the last 40 years - much of which is positive!

Professor Bridget Shield joined LSBU in 1986, and taught for almost 30 years at the School of the Built Environment and Architecture. She co-founded the Women in Engineering Centre at the University and was course director of the MSc in Environmental and Architectural Acoustics for many years. Her profile mentions that she was the first person to ask for maternity leave when she worked at the University of Birmingham, demonstrating another key issue in women’s careers, and also talks about some issues around suggesting more inclusive language in meetings when she joined the Board of the Institute of Acoustics.

Dr Sabarna Mukhopadhyay gained her PhD from LSBU in the early 90s, although she actually joined the department in the late 1980s when Agnes Kaposi was still with us – when talking about her profile she actually mentioned how inspiring and encouraging Agnes was. Sabarna ended up in Electrical Engineering slightly by chance, but was also involved with promoting engineering to women and girls. She now runs a software company in Cardiff.

Dr Claire Benson is both the initiator of the project and a chemical engineer specialising in fire.

She studied forensics as an undergraduate and was a senior lecturer at LSBU although she is now based in New Zealand.

Our most recent profile was Dr Zoe De Grussa, who had only recently passed her PhD when we interviewed her. If you read her profile she says that by the time she finished her undergraduate course the first year of the degree was 50:50 which I think is encouraging! She also points to the range of skills needed in engineering and to how helpful it is to have mentors – something which can be seen throughout these profiles.

There were a number of common themes and issues around researching this area of women’s history - of which our project was only a very small part. The Women’s Engineering Society’s centenary project goes into it in much more depth, but from our institution it’s clear that seeing other women who became engineers was hugely important. Madeleine Nobbs persuaded her father to let her study engineering after he met another woman engineer, and that visibility obviously continued to be important.

Research into our students is time consuming, partially due to the nature of the records we hold - exam registers don’t tell us much outside of marks! There are gaps in staff records, and often full names were not recorded in staff lists. Instead staff were referred to by surname and initial, sometimes without a title, which is encouragingly egalitarian in some respects but slightly frustrating from a research perspective! Governing body minutes tell us when someone was hired, and often have snippets telling us who also interviewed and some information about the job candidates, but they don’t mention when staff resigned unless they were very senior, and in more recent years staff appointments are not reported to the Governing Body so future researchers may not be able to do the same kind of project.

Changes of name could be difficult to follow, particularly where our women had more commonly occurring surnames. Our project budget didn’t necessarily cover getting certificate copies to see if we had the right person, so sometimes we had to consider some interesting sounding students as research dead ends. It can also be difficult to trace careers, the Woman Engineer was incredibly valuable for this, but many women were not members and we have no idea of where they may have gone on to work - or even if they were able to work in engineering at all. The closure periods around census records meant that we could get great information for some of the very early students, but not for later ones.

Possibly the most encouraging theme was how important mentorship was for many of our women, and how many of them were clearly very good at their chosen career. More than one woman that we spoke to about their time at LSBU (not just those we profiled) mentioned Professor Agnes Kaposi as an inspiration, and searching the journal of the Women’s Engineering Society has certainly demonstrated how helpful mentorship and positive role models has been for many women. It’s also clear that a department where a man felt comfortable telling his boss, or possibly his boss’s boss, that women should be at home, isn’t necessarily one where female students would have been encouraged.

As a group of women working on this project, and personally as a non-engineer, perhaps the most inspiring story to come from the project was again about Professor Kaposi. It was noted that Professor Kaposi hired a lot of women, many of whom said they applied to her department because they thought they’d have a fair interview. She said she hired them because they were the best.

Ruth MacLeod

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1. 1892 prospectus ref: LSBU/6/2/2 [↑](#footnote-ref-1)
2. Governing Body minutes ref: LSBU/1/2/6 [↑](#footnote-ref-2)
3. 1920 Prospectus ref: LSBU/6/2/6 [↑](#footnote-ref-3)
4. Governing Body minutes ref: LSBU/1/2/9 [↑](#footnote-ref-4)
5. 1930 prospectus ref: LSBU/6/2/8 [↑](#footnote-ref-5)
6. Westminster Archives ref: 2444/5/19 [↑](#footnote-ref-6)
7. Electoral registers for Surrey, available via Ancestry [↑](#footnote-ref-7)
8. Woman Engineer Vol 10 no 18 Autumn 1970 [↑](#footnote-ref-8)
9. Woman Engineer Vol 10, no, 20 [↑](#footnote-ref-9)
10. Woman Engineer vol 7, no 8 - Spring 1953 [↑](#footnote-ref-10)
11. Woman Engineer Vol 7 no 15, Winter 1954 [↑](#footnote-ref-11)
12. Woman Engineer vol 10 no. 18 [↑](#footnote-ref-12)
13. The appointment is reported in the Governing Body minutes, ref: LSBU/1/2/14 [↑](#footnote-ref-13)