

STINT teaching sabbatical 2016 report

Visiting Amherst College, Department of Mathematics and Statistics

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Introduction

A few years ago one of my colleagues went on a teaching sabbatical, and through him I got very interested in STINT:s teaching sabbatical program. Finding a program that focuses on teaching, and that is so beneficial for families, is quite rare. I was, and still am, highly interested in developing my pedagogical skills and renewing my courses in order to facilitate the best learning situation for the students, and this program seemed like the perfect platform to expand my horizon.

At that time it was quite difficult to find information about the program, the coordinators at Uppsala university didn't know much about it at all and referred me to my colleague for more information. Eventually the information from STINT passed through the university administration and to my department, who quickly took on the task of nomination.

At my department in Uppsala we had a strong desire to learn from another department similar to ours, we were in the phase of evaluating our newly started master program and were eager to learn from others in the same situation. Therefore, our hopes were that I would go to a statistical department with postgraduate students, not a mathematical one. However, when I was offered the STINT fellowship, I was placed at a mathematical department, not a statistical one, where they didn't even have a master program. Luckily, it wasn't very difficult to switch perspective from learning new things that would primarily benefit the department, to gaining a more personal experience.

Retrospectively, I am extremely happy that I ended up in Amherst, and nowhere else! Before this opportunity, I had little knowledge about the state of Massachusetts, and even less about Amherst, and I don't think that I would have come up with the idea of going there for a longer period on my own. Now I know that it is a truly beautiful place, with wonderful people, and all of my family grew very fond of Amherst and its surroundings.

Preparation and Planning

First contact

Only a few days after it was decided that I should go to Amherst College, I had a Skype meeting with my academic contact Nicholas Horton where he described the department, their courses and their typical students. I learned that there were only a handful of statistics professors, and I quickly made the decision not to require co-teaching. I know that co-teaching means a lot of work on both parties, and I wanted to make myself useful during my stay and not ask the hosting institution for extra resources in that way. Coming from a small department myself, within a subject where there always is a shortage of teachers, it wasn't a difficult decision to make. I was offered the possibility to give a course in multivariate data analysis that one of the other professors had been giving before, and I was welcome to use her prepared course material. This sounded like a good way of getting introduced to their way of teaching.

After the first Skype meeting we continued discussing via e-mail and soon decided on a good time for my planning visit. In the weeks/month to follow the administrative contact Janet Tobin put together a schedule for that visit, including meetings with various people at the department, a discussion with their HR department about my visa, visiting the house we planned to rent, etc. Janet is a fantastic source of knowledge and organizational commitment, I've honestly never met someone like her! She made everything so easy on us. One of the first things she did was to send a list of vaccinations required for my children to be enrolled into elementary school. Some of them would take longer time to administer, with several doses, and Janet of course knew to let us know early on. She also sent information about possible places to buy a car, rent a house, and anything else that she suspected we might have questions about.

STINT seminar

A very important part of the preparations and planning was the STINT seminar in Stockholm in February, where many practical issues could be discussed with earlier fellows. It was a huge comfort to meet someone who had been at the same college as I was going to, who could provide some insight to what was expected of me, and what kinds of support that would be provided. I even received some information about schools for the children, and the area where

we considered renting a house, as well as practical tips around buying a car, and (not) getting an American bank account.

Planning trip

I went on the planning trip in April, without my family, which was a huge responsibility. They had to trust me making wise decisions about housing, school for the children, etc. I'm happy to say that all our first hand choices turned out satisfactorily, which means that I didn't have to come up with any secondary options for my family.

As we were planning to bring our Labrador we wanted to avoid changing planes. I did the same for my planning visit, so I flew to New York and rented a car from there. Without traffic it should have been a three-hour drive, but arriving on a Sunday afternoon makes it extremely difficult to avoid traffic. The drive took me six hours! Jet-lagged and extremely high on energy drinks full of caffeine I arrived at the warm and friendly homestead of Bob and Janet Winston very late at night. I had been recommended a hotel in Amherst but decided to find a B&B instead, in order to have someone to talk to over breakfast and in the hopes of getting some local tips during my stay. This turned out to be one of the best decisions I made, we became very good friends and continue to keep in touch.

During the planning visit I got to meet the academic and administrative contacts, all statistics professors, the department chair, and the department coordinator. I sat in on a number of different classes, which gave me a good glimpse of what to expect in terms of teaching and interaction with the students. I also visited the IT help desk and got my staff ID card and login credentials, and met with human resources and sorted out what was needed for the visa application. In addition, I was taken on a private campus tour, and had dinner with the statistics part of the department including their student workers. All of this covered four days, and by the end of the week I felt very comfortable that I would be able to return in August, knowing what to do, whom to ask about different things, and what was expected from me. Everyone were so welcoming, and truly enthusiastic about me coming there.

I also visited the school that we had been recommended for our children, Crocker Farm Elementary School. It turned out that they had very good experiences with non-English speaking children and I got a very good impression from the school and its personnel.

The house that we had been offered to rent also suited us very well, located in South Amherst right next to small mountains and many trails where we would be able to take our dog for walks.

Tasks and responsibilities

I had full responsibility of one class (Multivariate Data Analysis), including planning and preparing class, homework, midterm exams, grading, helping students during office hours, etc.

As mentioned earlier, the class had been given previously, and material from that professor was handed over to me. I chose to use the same set-up of the class as the previous professor, to try her way of teaching. If I would have had this class more than once I might have chosen a different approach, but now I wanted to learn as much as possible of the way they do things at this department. I was also new to the software that was to be used, which means that the old material was extra valuable from that perspective. This way I could focus on learning what was new to me instead of making up new material.

Just as in Sweden, the professor “owns” the class, and can choose the content, examination form, etc. This was done during the spring in collaboration with the previous professor and my academic contact.

The class met three times per week, totally 3 h 40 min each week. In addition to that I had scheduled office hours about 4 hours/week. I handed out written assignments about once per week, and we had two mid-term exams plus one final data analysis project. All of this was individual work, but there was always someone to ask whenever I wanted.

Most of the classes were focusing on analyzing data, working hands on with different datasets. The students brought their laptops to class and worked in pairs or groups. I was lucky to have a teaching assistant, a senior student with lots of knowledge about the software, who could sit in on many of my classes and assist with software related issues.

During the semester I discussed quite a few options with the students, I was open with the fact that I was there to learn. And they were very generous with comments and suggestions that helped me both understand the way that they usually do things, as well as ideas of how things could be improved.

Activities during the semester

Amherst College has a fantastic way of welcoming new faculty, even the ones visiting on a short term like me. I was regularly invited to lunches, dinners (with and without family), seminars and workshops organized for new faculty. This provided great opportunities to meet other faculty also being new to Amherst, as well as getting to know some of the administrative staff.

Besides attending the program for new faculty and teaching the class as described earlier, my main activities during the semester consisted of attending a number of statistical seminars, sitting in on other professors' classes, and joining pedagogical and other valuable seminars and workshops that continuously were offered at the college. They put great emphasis on the responsibility of faculty to work against discrimination, for inclusiveness. Some examples of trainings/workshops that I attended are listed below.

- “Public speaking as performance”, a very practical workshop where we practiced giving constructive feedback on oral presentations, and were presented with a suggestion of a grading rubric that can be used to grade students' speaking performances.
- “Struggling students”, a discussion with the college's class deans on how to help students that for some reason are having a tough time passing your course.
- “Title IX training”. Title IX is part of a federal education law that prohibits discrimination on the basis of sex in any federally funded education program or activity. Sexual harassment and sexual violence are forms of sex discrimination. Amherst College is committed to providing an environment free from discrimination, including discrimination based upon sex. This training is mandatory for all faculty at the college.
- “Bystander intervention and sexual respect training”, an interactive workshop providing the opportunity to learn and practice the skills of bystander intervention and to increase the ability to recognize warning signs that may lead to sexual violence.
- “Attitude is a choice”, a workshop focusing on how your attitude affects others around you and how you can influence others with your attitude. We explored ways to communicate with others who may have a bad attitude that serves to inhibit or undermine the needs of the college or the department.

The department had lunch together with students and anyone else interested in mathematics or statistics once a week, and I attended as often as possible. During these lunches we had quite a few discussions about similarities and differences in higher education between Sweden and the U.S., where both colleagues and students were quite interested in my experiences from Sweden and especially Uppsala.

Unfortunately my scheduled classes overlapped with the weekly department meetings, which means that I couldn't attend to those. It would have been interesting to participate, to learn more about how different things were run at this department.

In addition to the teaching related activities mentioned above, I was also invited to the University of Massachusetts, which also is located in Amherst, to give a presentation of my research at their biostatistics department.

Important lessons

During my time at Amherst College I learned quite a few important lessons. The first and perhaps most useful lesson for the future is about clarifying expectations. I always put a lot of effort into giving clear instructions to the students, specifying what I expect from them, what they can expect from me, and how I will grade their work. Being at a foreign institution made it clear to me how much of those expectations that are somehow built into the culture, many things are taken for granted, and only parts of all these expectations usually need to be clarified. I started out with what I thought were clear specifications, that I revised during the course by adding more detailed information, since I noticed that the students had a lot of detailed questions about how their results on e.g. the homework would influence their grade. Eventually I thought that we had very clear specifications of what the students should achieve in order to receive different grades, and still the grading was by far my most difficult task. There were so many different parts of the course being graded (home work, exams, quiz, analysis project, oral presentation, participation in class) and the grades of all of these parts should be weighed together in a reasonable way. And the American grading scale is extremely different from the Swedish one; A+, A, A-, B+, B, B-, C+, C, C-. D was hardly ever used, if you during the semester suspected that a student would get a D you had to report it and take actions to help that student perform better. F would only be given to a student that didn't really participate in the course. I was told that an average grade would correspond to B+, and the students told me that they expected high grades – they were used to “grade inflation”.

Something I didn't anticipate was how important the small scale steps are to the students, the to me small difference between e.g. A- and A could be enormously important to the student. Luckily I could sit down with my academic contact and go through all of the students' achievements to ensure that I was giving them grades that would match the department's way of grading. So again, the lesson from this is to be even better at clarifying expectations in the future.

Other lessons that I learned were that I already do some things well, which of course is extremely positive to discover. At Amherst College they don't do much of lecturing, they have chosen to use a more problem solving pedagogy instead, which is very much appreciated by the students. This coincides very well with the way that I teach in Sweden, using the so-called flipped classroom pedagogy. The difference is that the Swedish students have to be "forced" learning the material before meeting in class (I have chosen to do this by having them watch video lectures with built-in quizzes), whereas the Amherst students very well could read a text on their own to prepare. I would just give them reading instructions, and they actually followed these! That would never happen with my Swedish students, and I'm fine with that. I will not change my way of teaching based on this experience, instead I feel encouraged to continue the way I already do it.

The teaching was not as different as I perhaps thought it would be, the relationship with the students was similar to what I have experienced in Sweden, which also was very reassuring. Now I know that it isn't that big of a deal to teach at another institution.

One thing that I'll try to implement in the future is to establish "office hours", dedicated to interacting with the students outside of class. This encourages the students to come to you with all sorts of questions, which I thought was very positive at Amherst College. At my home institution students do come knocking on my door sometimes, but not as often as they perhaps would benefit from doing.

Comparison between the foreign and home institutions

Student population

The admittance rate at Amherst College is only 14%, which means that the students that are accepted are bright and ambitious. Many of the people I talked to, including the college president, liked emphasizing the brightness of their student body. After getting to know a

class of students, I have to say that the students that I usually have the pleasure of teaching at Uppsala University are just as bright. The ambitiousness differs, however. As I mentioned earlier, the students at Amherst College come prepared to class. The students I had were extremely ambitious, and did whatever I asked of them. I gave them a list of reading each week, and they actually read everything on that list – even with short notice. That never happens in Uppsala. The Amherst students were to a larger extent anxious to get top grades, in Sweden the largest focus is to pass (G) and for a few students it is more important to pass with distinction (VG), but it is rare to end up in a serious discussion with a student about his/her grade.

The classes are smaller at Amherst College, 90% of the classes have fewer than 30 students. This of course play an important role when it comes to minimizing lecturing, it is a lot easier to discuss problem solving in smaller groups. I'm however convinced that we could move away from lecturing even for larger classes, using more peer-to-peer discussions and e.g. clickers to get a larger group of students to respond to different questions, etc.

The relation between research and education

Amherst College is an undergraduate college, with no postgraduate research programs. Teachers do research on their spare time. This brings a natural emphasis on teaching, quite different to what you see at Uppsala University, which is a research university. In Uppsala an alternative way of making a career has recently been developed, focusing on teaching. You can apply to be recognized as an “excellent teacher”, if you have achieved a higher level of pedagogical skills. There are clear guidelines of what you should have achieved in order to be accepted, and if you succeed, you not only get the title but also a raise. Nevertheless, I would say that there still is a clear separation between “teachers” and “researchers”; it is rare to see one faculty being good at both.

The relation between teacher and student

I would say that the relation between me as a teacher and the students is about the same at Amherst College as it is at my home institution. The American students are used to addressing their teacher more formally than the Swedish students, most of them would call me “professor”. Despite that, they are just as interested in discussing personal matters as my students in Sweden are. In Amherst I had especially one student that liked coming to my office hours not only to discuss the content of the course, but also to learn more about Sweden.

The institution's view of breadth versus specialization in education

At the Mathematics and Statistics Department at Amherst College breadth is more important than depth, they have many courses running simultaneously and not necessarily with that many prerequisites. At the Statistics Department at Uppsala University, we follow what I would say is the classical Swedish structure of A, B, and C level courses, where you need the knowledge from the previous level in order to be accepted and follow the content of the next level. I see advantages with both of these views, where the breadth would be very useful in the beginning of the education and the depth being more important later on. If we had enough resources we could offer a variety of elective courses that the student can choose between after a first introductory course, where we ensure that the students learn the foundation of statistical thinking during e.g. the first two semesters, and then increase the depth at the third semester. I can see many advantages with this, where I believe that the students that do not pursue a higher education in statistics would get a more useful, practical education compared to what we offer them today. This is however not possible at my home institution, since it would require a lot more resources than we have today.

Competence development for teachers

As mentioned above, Amherst College has a lot more resources than Uppsala University. This shows in the competence development offered to teachers. At both Amherst College and Uppsala University there are pedagogical workshops and trainings offered throughout the academic year, and I would say that the quality of these are very good at both institutions. In addition to this, at Amherst College you are offered one-on-one meetings to go through the details of your planned course, to get help with suggestions of how to improve or change your pedagogical approach, etc. You can get a share of this in Uppsala as well, but not to the same extent. I am very happy about how it works in Uppsala, I believe that the pedagogical development being offered to teachers is fantastic. Of course, if we again had the same resources this could be improved even further.

Teacher recruitment

American colleges and universities all seem to have some system of sabbaticals, where faculty get a semester off, a paid leave of absence. Amherst College encourages their faculty to go to other places, to gain experience from other institutions. After three years, you get one semester off, and you are encouraged to take a second semester (unpaid) to be away for a full year. Along with this comes the fact that you have to find someone to replace the teacher

being on sabbatical, and there are often vacant positions as a “visiting professor”. It also means that there are more teachers looking for these visiting positions than there would be in Sweden, where especially in statistics it can be extremely difficult to find a visiting teacher. This is something that I can see would benefit the Swedish institutions too, but again it comes down to limited resources.

Pedagogy and its importance

We talk a lot about the importance of pedagogy at Uppsala University, and there are many courses that you can take part in to improve your pedagogical skills. But there are no requirements to do so, and listening to the students I would say that we have many teachers that could benefit from improving their pedagogy. I have talked to many students who choose not to go to the lectures, since they don't feel that the lectures give any additional value compared to reading the literature on their own. At Amherst College, my academic contact not only sat in on my class, but also gave me valuable feedback on my pedagogical performance.

I also sat in on other professors' classes, which was extremely valuable, giving insight to different pedagogical styles and approaches. All the professors that I talked to were very welcoming, happy to let me sit in, and eager to hear if I could provide any feedback afterwards.

At the Department of Mathematics and Statistics at Amherst College, course evaluations are used to determine reappointment, promotion, and tenure decisions. They have a formal procedure for tenure line and long-term visiting faculty, where the process includes a visit with the instructor in advance of a series of class observations followed with a discussion after the classes that leads to a short report. They have found this process very helpful for both the person being reviewed and the team doing the evaluation. All of this reflects the importance they place on pedagogy.

I would very much like to see a similar system being introduced in Sweden, perhaps a peer evaluation system, where faculty sit in on each other's classes and evaluate a number of pre-determined aspects, and where course evaluations routinely are being evaluated. This is not something that we do at my home department, and I haven't heard of any other department doing so either.

Curriculum and courses offered

The courses offered at both institutions reflect a general idea of ensuring that the students have basic skills needed to work as a statistician, and there seems to be a more or less worldwide agreement on what these basic skills are. Therefore, both the curriculum and courses offered are quite similar.

Forms of examination

All courses at Amherst College run across the whole semester, and full time students take four courses simultaneously. Once or twice during the semester they have midterm exams, and most courses have a final exam at the end of the semester. This resembles the forms of examination at my home institution, where we at least for the larger/longer courses use part exams that might not be as formal as Amherst's midterm exams but cover very similar aspects of the course. In addition to this, there are a number of homework assignments handed out both at my foreign and home institutions. In Uppsala we have fewer homework assignments than at Amherst College, which makes sense due to the fact that the courses at Amherst are more stretched out and you need to ensure that the students are working on the subject throughout the whole semester in order not to forget any aspects of the course. This would be tough to incorporate at my home institution, where we usually give only two courses simultaneously and during half of the semester, i.e. our courses usually run on 50% of full time compared to 25% at Amherst College. I guess this means that the workload is heavier for the Amherst students than for my Uppsala students, at least if all departments hand out the same amount of homework.

One thing that I've already incorporated back home is an alternative to a final exam that some of the professors at Amherst have chosen to use. They hand out a project that the students are working on for several weeks, where they define their own research question and find data on their own, which introduces the possibility to examine the students ability to work in a "real-life" situation. This was a very positive experience to me as a teacher, and I could tell that also the students really enjoyed working on this project as well as learning about the other project groups' results.

To what extent educational programs conform to labour market needs

As mentioned above, the courses offered both at Amherst College and my home institution do conform quite well to labour market needs. In Uppsala we've had discussions with

representatives of some major employers of statisticians in order to find out what skills they believe are necessary for a newly graduated student, and we try to incorporate those requests into our educational program. Based on the contents of the statistical courses at Amherst College, they have the same approach.

Use of technology

Statistics is a subject that requires the use of computers, which means that most statistics departments make use of computational technology in some way. At Amherst College the students bring their own laptops to class, whereas at Uppsala University we have computer labs with stationary computers for the students to use.

Amherst College has a few classrooms that are organized in a technology friendly way, with islands of tables with a couple of monitors in the middle where the students can connect their laptops (see picture below). This promotes working in groups, showing e.g. analysis results on the monitor to enable discussions. In addition, there are a number of larger screens on the walls, where a student group via Wi-Fi can share what is shown on their smaller monitor, for the whole class to see. I would love to have a classroom like this in Uppsala!



Action plan - topics to address and if possible introduce in Sweden

As mentioned above, there are a few things that I would like to introduce in Sweden, briefly summarized below.

Personally

I believe that using project assignments instead of a final exam is a better way of preparing the students for the job market, and I have already incorporated this into my courses in Sweden.

It was very valuable to sit in on the other professors' classes at Amherst, and I will ask my colleagues in Sweden if I can sit in on their classes too.

For the Department of Statistics

I will suggest the use of a peer evaluation system, in order to share pedagogical experiences between colleagues. For this to work we would have to formalize how such an evaluation is to be performed, e.g. putting together a number of items to evaluate or questions to find answers to, such as: i) planning – what is the teacher's intention with the class, what does the teacher want the students to learn; ii) pedagogical style, interaction with students - how actively do the students participate, how are questions being answered, how are students not participating being activated, etc; iii) course material - how well is it covered; iv) follow-up in terms of planned examination, etc. This could later on be used as an incentive for salary adjustments, together with course evaluations.

For the institution, i.e. Uppsala University

It would be a great asset in my courses to have a classroom better suited for group work using computers, monitors, etc, in a similar way as they have at Amherst College. This is a relatively large change to ask for, which would require an investigation of how many departments that would benefit from this type of classroom, and if there are any resources available for these types of installations. I will find out where to post this request, and contribute with my ideas and experiences wherever these can be of use.

In the Swedish research and education system

Evaluating the pedagogical performance of a teacher using e.g. a peer evaluation system as described above would in my mind be beneficial to all institutions, not only at my department or university. I am planning to start by reviewing the Swedish literature on this topic, to find

out if such a system is being used anywhere today and if so in what way. I believe that formalizing the evaluation of the teaching situation would help increasing the status of pedagogical merits, as a complement to the emphasis placed on research merits today.

Concluding remarks

When me and my husband first told our children that the nomination to the STINT teaching sabbatical program was in progress, and presented the possibility of us going abroad for a semester, they actually didn't want to go! They couldn't imagine leaving grandpa for that long. But when we told them that they possibly would be speaking English fluently at the end of the semester, they changed their minds. This was also one of the absolutely greatest benefits of this semester, not only did I get the chance to broaden my perspective on teaching, but we could gain new experiences together as a family. We all had a fantastic time, and learned so much, and we are extremely grateful to STINT for giving us this opportunity.