

Accommodating Gender and Disciplinary Background in Interdisciplinary Postgraduate Education

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Abstract

This project investigated dynamics of belonging, teaching satisfaction, and differential treatment in a novel, interdisciplinary MSc program. Such programs, combining technical and social sciences, are increasingly relevant for contemporary societies but face established inequities around disciplinary and gender norms. The program's intentional approach overcame these inequities successfully but will have to monitor potential unintended consequences.

Project Goal

The aim of this project is to assess students' perceptions of *belonging*, *teaching satisfaction*, and *differential treatment* in an interdisciplinary post-graduate education program combining social and technical sciences, with the assessment focusing particularly on how gender and disciplinary background figure in these perception

Motivation

This project is motivated by the unique challenges facing interdisciplinary postgraduate programs that combine social with technical sciences, looking particularly at the Social Data Science (SDS) MSc program at the University of Copenhagen. This and other interdisciplinary programs usually cannot draw upon established undergraduate degrees and are thus open to graduates from various disciplinary, methodological, and academic backgrounds. In addition to this disciplinary diversity, including elements of technical sciences adds complexity around issues of gender which further underscore the need to generate an inclusive environment that welcomes and values the contributions of each student independent of their disciplinary background or gender identity.

The MSc in SDS "combines state-of-the-art data science techniques... with core sociological, economic, anthropological, political science and psychological theories and methods to equip students with the competences to identify, assess and solve societal and business problems in the digital age." [1] Along with the combination of social science with data science, the latter also combines computer science and statistics. As such, SDS sits at the intersection of multiple trends in relation to gendered enrollment, identity, and career progression. Computer science, and STEM fields more broadly, are well-known for the low proportion of women and others with marginalized identities entering in programs and decreasing over career stages. A pattern in part attributed to discrimination and exclusionary environments [2]. On the other hand, social science fields in Denmark generally have relatively balanced numbers of men and women in education.¹

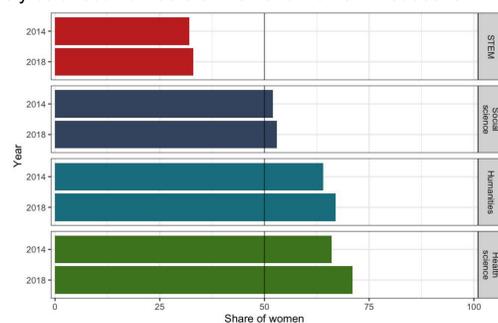


Figure 1. Share of women first year students across different academic fields in Denmark in 2014 and 2018. Authors visualization from data contained in [3].

¹These statistics and our data only address binary gender categories (men and women) and thus do not offer insight into the experiences or trends relating to non-binary individuals, experiences which should be centered in future research.

As a new, interdisciplinary program, the MSc in SDS, has the opportunity to break with existing cultures of education that contribute to these gendered (and other) disparities and develop new norms and identities relating to gender and profession. This is crucial, as such gendering of a field affects practices in the labor market, including hiring and pay. The norms developed in the MSc in SDS are thus significant for both educational and career trajectories of students [2].

Methods

We conducted a panel survey of the first cohort in the MSc in Social Data Science at the University of Copenhagen (N = 39), fielding survey waves before the start of program (Wave 1) and after each course block (Block 1, Wave 2; Block 2, Wave 3; Block 3, Wave 4). After a perfect response rate in Wave 1, later waves saw increasing attrition (Wave 2, n=33; Wave 3, n=25; Wave 4, n=16), which we account for by interpreting quantitative results with open-ended qualitative responses as context.

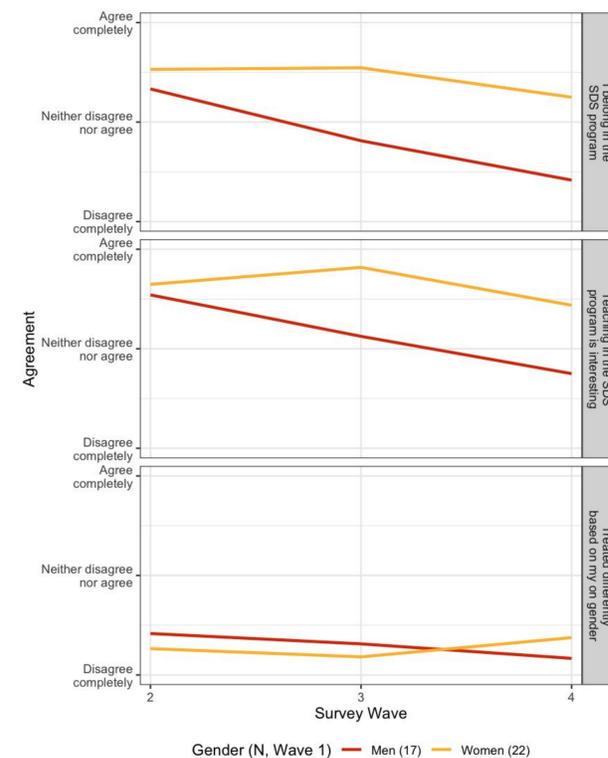


Figure 2. Agreement with statements on belonging, teaching quality, and differential treatment across survey waves by student gender.

Key Result

The MSc in SDS initial environment successfully included women and students from key social science discipline, but over time the program appears to lose this inclusivity for men and some disciplines.

Results

The results from our panel survey suggest that the program has been successful in creating an initial sense of belonging in SDS for most (see row 1 of Figures 2 and 3). In open-ended responses students state that the program contributes to their future goals and has been a positive experience. One student, for example, describes how the program contributes to their future goals by giving them, "the tools, through computing and coding, and critical thinking through ethical discussions, papers and being involved in a multidisciplinary environment with a variety of perspectives." In responding to what they overall like about the program in Wave 2, another student explains: "The interdisciplinary environment and that both staff and students are committed to the programme." However, other students also express frustrations and challenges of the program: heavy workload, exam format and preparation time, specific courses, and mismatches in expectations.

Students in the program enter with experience and training with many different methods, theories, and theoretical approaches. This leads to diverging experiences of the program content, as the responses to "The teaching is interesting" reveal (see row 2 in Fig. 2 and 3).

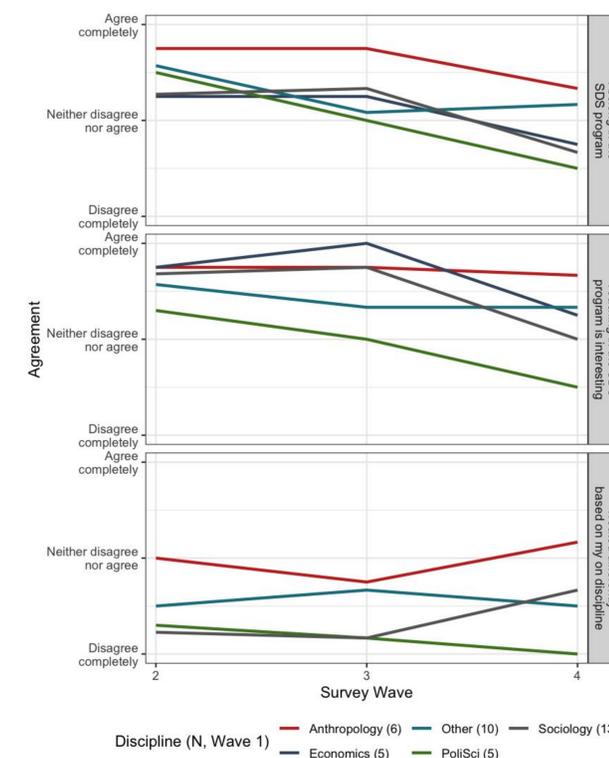


Figure 3. Agreement with statements on belonging, teaching quality, and differential treatment across survey waves by student Bachelor's discipline.

One student, for example, explains "this program has a very steep learning curve for someone with a limited statistical and non-existing programming background" and another highlights in Wave 4 how students are both ambitious but, for many, also insecure about their mastery of skills. Yet, another student suggests "To be honest, I am a bit frustrated at this point... I was looking forward to increasing my skills in statistics and coding. Neither has happened so far." Similar frustrations through later waves. The program started with the idea that instruction should start at a basic level as some students would enter with no programming experience and limited math background at a university level. In this regard, the program seems to have avoided the pitfalls of introductory computer science courses that tend to weed out students undermining feelings of belonging and confidence, often along gendered lines. Thus the program appears to buck the problematic trend of computer science with few and decreasing numbers of women in the discipline [2-4]. On the flipside, our data suggests that the program has decreased feelings of belonging and interest in teaching, particularly for men in the program and for those who enter the program with existing programming and data science skills, both of which present problems in the short and long-terms.

Conclusion

While our data do not allow us to pin down specific causes for the trends we observe, and likely the reasoning is complex, one potential explanation is the program's explicit and intentional approach to ways of working. Specifically, the program emphasizes collaborative, interdisciplinary group work, with the primary social science disciplines feeding the program (Anthropology, Sociology, Economics, Political Science, and Psychology) given the most explicit discussion and recognition. In this regard, students from other disciplinary backgrounds might not have their backgrounds recognized within discussions of SDS, although the extent of this issue potentially decreases as the program progresses (see row 3, Fig. 3). Nonetheless, these approaches may have produced specific norms about how to be a social data scientist and as such narrowed the scope of gender and disciplinary identities that are accommodated. On the whole, the program appears to succeed in preventing common problems regarding gender and disciplinary inequalities but will have to evaluate countervailing trends observed in the surveys. More research is needed both to confirm these trends and explore what contributes to them and to other experiences that students navigate in the program.

References

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