

# Diversity in Computing

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## Abstract

This research poster investigates the critical issue of diversity in computing education. Gender imbalances and underrepresentation persist in third-level institutions across the EU. Some institutions, like TU Dublin, have made strides in achieving a more balanced student body. Building on the work of [1] Zanardi et al. (2023), this project seeks to uncover the relationship between language in degree program descriptions and diversity. By analysing publicly available course and module descriptions and recent gender and ethnicity data, I aim to determine whether social values in descriptions correlate with student and staff gender balance and ethnic diversity. This research strives to provide insights that can drive effective strategies for improving diversity in computing education.

## Introduction

### General Introduction to Computing Education:

The field of computing has emerged as a cornerstone of modern society, driving technological innovation across various sectors. However, an ongoing issue within computing education revolves around the lack of diversity, particularly in student demographics. Historically, computing programs have mostly drawn an isolated demographic, resulting in underrepresentation of various genders, ethnicities, and social backgrounds.

### Importance of Diversity in Computing:

Diversity in computing education is more than just an ethical or moral requirement, it also has a direct impact on the quality and range of innovations. A diverse set of perspectives encourages creativity and inclusive problem solving, critical in addressing various challenges. A lack of diversity in computing courses perpetuates a cycle in which certain communities are excluded from advances in technology. This exclusion not only restricts individual career paths, but it also limits the amount of technology advancements that might address greater social issues. As a result, understanding the current state of diversity in computing, identifying challenges, and exploring effective strategies to promote diversity are critical steps toward building a more diverse and innovative computing workforce.



Figure 2. RIT. (2019) [2]

## Methodology

### Data Collection:

The initial phase involves the collection of descriptions of computing program courses, and module descriptions from various third-level universities/colleges. These descriptions, accessed from university/college websites and other relevant sources, provided insights into the language and tone used to attract potential students.

### Data Processing:

The collected data underwent meticulous processing to ensure accuracy and reliability in future analysis. This step involved data cleaning to remove duplicates, formatting issues, and irrelevant content. The processed data was then converted into an analysable format, setting the foundation for the text analysis.



Figure 2. Dcmlearning.ie. (2023). Equality, Diversity & Inclusion Course. [3]

### Text Analysis:

Using advanced language analysis techniques and methodologies, the study investigated the language complexities within the collected descriptions. The objective is to analyse the text to determine the degree of 'educational', 'social', and 'technological' content of the description. Categorizing the descriptions facilitated an exploration of their content, aiming to understand how it influences the attraction of diverse student groups.

### Correlation Analysis:

I explored the connection between language used in computing program descriptions and the diversity among enrolled students. By examining how language choices reflect the diversity within student populations, I aimed to uncover key factors contributing to the lack of diversity in computing education.

This approach allowed for a thorough understanding of how language in computing degree descriptions might unintentionally contribute to the field's ongoing lack of diversity.

## Recommendations

### Language Reflecting Diversity:

Universities play an important role in incorporating language that highlights various aspects of education, society, and technology into their course descriptions. By adopting a vocabulary that speaks to everyone, we not only encourage inclusivity but also recognize the various components that create computing education.

### Continuous Evaluation and Adaptation:

The path for colleges/universities does not end with the implementation of inclusive language. It is about continuous conversation and adaptation. Listening to students and staying connected to societal shifts helps us keep our language fresh, inclusive, and relatable. This ongoing evaluation ensures our descriptions resonate with everyone, today and in the future.

These suggestions are like a roadmap, guiding institutions to actively reshape how they communicate. By tweaking the way, we speak in our course descriptions, we create a space that warmly welcomes everyone. It's about making real changes that embrace diversity and make computing education a place where everyone feels they belong.

## Conclusion

As I conclude this research journey, it's evident that every word holds immense power. Throughout this study, I've witnessed how language within computing degree descriptions shapes inclusivity. It's more than just text, it's about crafting an environment where everyone feels valued. Through inclusive language, I've seen the potential to create a computing education that embraces diversity. This realization emphasizes the ongoing need for universities/colleges to adapt, listen, and select words that genuinely represent our diverse society. Building an inclusive computing education starts with the language we choose.

## Bibliography

- [1] Zanardi, I., Versino, S., Bolesta, K., Szlavi, A., & Landoni, M. (2023). Looking for a Major in Computing? Technical Knowledge versus Broader Social Values in Computing Majors. In Proceedings of 10th ACM Celebration of Women in Computing womENCourage (womENCourage), Trondheim, 20-22 September. Available online at <https://womencourage.acm.org/2023/wp-content/uploads/2023/06/womencourage2023-posters-paper84.pdf> [Accessed 15 Nov. 2023].
- [2] RIT. (2019). Ph.D. student receives prestigious Microsoft Research grant for diversity in computing. [online] Available at: <https://www.rit.edu/news/phd-student-receives-prestigious-microsoft-research-grant-diversity-computing> [Accessed 05 Dec. 2023].
- [3] Dcmlearning.ie. (2023). Equality, Diversity & Inclusion Course. [online] Available at: [https://dcmlearning.ie/courses/member-only-courses/edi-course-\(exclusively-for-dcm-members\)/?utm\\_source=Google&utm\\_medium=CPC&utm\\_campaign=DCM+New+%7C+EDI&gclid=CjwKCAiAg9urBhB\\_EiwAgw88mFSXs0U8jo4l\\_BvxO-CiWZhtNg9wyUBYKw0uS0lkZwVBzq-8J-YiBoC36YQAvD\\_BwE](https://dcmlearning.ie/courses/member-only-courses/edi-course-(exclusively-for-dcm-members)/?utm_source=Google&utm_medium=CPC&utm_campaign=DCM+New+%7C+EDI&gclid=CjwKCAiAg9urBhB_EiwAgw88mFSXs0U8jo4l_BvxO-CiWZhtNg9wyUBYKw0uS0lkZwVBzq-8J-YiBoC36YQAvD_BwE) [Accessed 07 Dec. 2023].