Creating a More Inclusive Environment for LGBTIQ+ Students in ICT: Do's and Don'ts

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Making classrooms more inclusive is not only an ethical imperative but also a way to ensure quality of the learning process. While this is true for any student, this is even more so for students from minoritized groups such as LGBTIQ+ students.[1] At the same time, the climate in the engineering disciplines is known to be problematic for LGBTIQ+[2], and ICT-related engineering disciplines, are seen as less LGBTIQ+-friendly than, e.g., chemical engineering.[3]

As a first step towards improving this situation we have identified a series of "do's and don'ts" that can contribute to creating a more inclusive classroom for LGBTIQ+ students in ICT. This document came to be as a result of multiple rounds of reviewing involving LGBTIQ+ ICT students, researchers and practitioners to whom the authors are very grateful for contributing their time and knowledge.

Adhering to these do's and don'ts may present a challenge and could potentially result in mistakes, such as inadvertently using incorrect pronouns. However, based on our experience, LGBTIQ+ students value teachers who demonstrate an understanding of gender and sexuality issues and make sincere efforts to foster inclusivity within the classroom. They are also generally forgiving of unintentional slip-ups in language.

The recommendations below are organized in two groups: those related to social communication, and can potentially be applied in any classroom, and those specificall related to teaching ICT-related disciplines.

General:

1. Organization of work. Since gender is not binary, when forming two groups do so based on the students' birth month rather than "girls vs boys".
2. Inclusive language:
    a. Since gender is not binary, please do not address students as "Ladies and gentlemen"; **"dear students"** is a better alternative. In a similar way, "guys" is not gender-neutral, "folks" might be a better alternative - in general, avoid gendered terms as much as possible, even if they are broadly assumed to apply to everyone but are gendered in the original meaning.
    b. Do not assume the students' gender based on their appearance or name. As remembering pronouns of hundreds of students might be implausible, consider

[1] Renn, Kristen A. Success for LGBT College and University Students. In: Crimmins, G. (eds) Strategies for Supporting Inclusion and Diversity in the Academy. Palgrave Macmillan, Cham.
[2] Cech, Pham. Queer in STEM Organizations: Workplace Disadvantages for LGBT Employees in STEM Related Federal Agencies. Soc. Sci. 2017, 6, 12. Sansone, Carpenter. Turing's children: Representation of sexual minorities in STEM. PLOS One.
[3] Cech, Waidzunas. Navigating the heteronormativity of engineering: The experiences of lesbian, gay, and bisexual students, Eng Stud 3(1)1-24, 2011

using the **first name** when referring to another student in the classroom (e.g.,“Kopal do you agree with Jun?” instead of “Kopal do you agree with him/her/them?”) or **singular *they*** when the gender of the person is not known or irrelevant (e.g., a hypothetical character).

c. Do respect students’ **pronouns**. Moreover, in your course site/community online, introduce yourself and encourage your co-lecturers and TAs to introduce themselves with their pronouns. This way students will experience an openness towards them letting their pronouns be known to you or, e.g., the TA in tutorial sessions. At the same time, do not make sharing pronouns mandatory as not everyone might feel safe or ready to share their pronouns.

d. **Sex and gender are not the same**: while the former is typically related to biological and physiological characteristics of humans and animals, the latter, gender, is related to culture and society. Mostly, one should be careful to NOT promote the idea that "sex is 100% biological" because that is sometimes used as a focal point for harassment.

Computer Science-specific

1. When teaching courses involving variables (**Programming**, **Statistics**, **Logics**, **Software specification**) remember that gender should not be used as a binary variables. Alternative examples are present/absent, true/false, success/failure.
2. In **Logic**, do not give counterexamples using men and women that assume that the two sets have an empty intersection; for example, to show that (\exists x A(x)) \and (\exists x B(x)) does not logically imply \exists x (A(x) \and B(x)), rather use a counter-example with something like squares and triangles for A and B. When teaching advanced non-classical logics, consider mentioning that many-valued and fuzzy logics can be usefully used to think about gender (and sexuality).
3. In **Discrete Mathematics**, do not describe groups as being necessarily composed entirely of men and/or women. Trysten Scott Richard and their co-authors have proposed a set of LGBTQ-Inclusive problems in discrete mathematics.[4] The following example shows that one can propose exercises with more than two genders. **Example**: *A group of students is surveyed about race and gender identity for research purposes. The survey lists 6 categories for race and 4 categories for gender. How many different survey results are possible if students are allowed to check 1 vs. 2 boxes for race and 1 vs. 2 for gender?* By preference, also do not use race and gender as discrete groups.
4. When teaching courses that involve modeling data about humans (e.g., **Databases**, **Software specification**, **Programming**) remember that gender or name are not fixed. Hence, do not use this information to identify people e.g., as (a part of) a database key. Students should be made aware of the harm incurred when this rule is violated. They should be made aware of diversity in names, gender, ethnicity, and family structures. An example problem from the same paper by Trysten Scott Richard and their co-authors: “*Charlie and her girlfriend, Amber, go to lunch at a restaurant with 7 sandwiches and 5 drinks on the menu. How many possible two-sandwich, two-drink meals can they order*

[4] Paper https://dl.acm.org/doi/pdf/10.1145/3478431.3499330 Problems https://zenodo.org/record/5750770#.Ytm1kexByDU

(regardless of which of them orders first) if they order different sandwiches and drinks from each other?"

5. In **programming** assignments, when asking the students to design a software system that needs to include gender-related information, encourage the students to reflect on whether this information is needed, how it is going to be collected, stored and used. This is also an excellent opportunity to explain the principles of proportionality and subsidiarity as they are, e.g., encoded in the GDPR.
6. When proposing **programming** or **modeling** assignments, consider the needs of LGBTIQ people, e.g., reducing isolation among elderly LGBTQ people, or giving shelter and other resources to unhoused queer youth. A possible source of inspiration is "Design Justice: Community-Led Practices to Build the Worlds We Need" by Sasha Costanza-Chock https://library.oapen.org/handle/20.500.12657/43542 Another example of such a programming assignment proposed by Dr. Francisco Gomes de Oliveira Neto required the students to implement a software system for hospital management. In this system, users could register patients, their health records, and different medical procedures. One of these procedures was a gender-affirming surgery (GAS) aiming to bring awareness to: (i) the distinction between biological sex and gender identity, and (ii) how to properly represent gender in software system.[5]
7. In **Data Structures and Algorithms**, do not present the stable marriage problem as a story about women and men. Instead, tell the same story about companies and job candidates or about students and student houses with a free room.
8. When requiring students to perform research with human participants (**HCI**, **Security**, **Software engineering**), encourage the students whether they need to ask about gender. Should this be the case please consider encouraging them to ask an open question, see https://www.vanderbilt.edu/lgbtqi/resources/how-to-ask-about-sexuality-gender and https://www.morgan-klaus.com/gender-guidelines.html

[5] Excellence in STEM with Dr. Francisco Gomes de Oliveira Neto https://www.computer.org/publications/tech-news/insider-membership-news/excellence-in-stem-francisco-gomes-de-oliveira-neto