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## Should Teaching Guides Be Used As Indicators Of Gender Dimension In A University Degree?

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# SHOULD TEACHING GUIDES BE USED AS INDICATORS OF GENDER DIMENSION IN A UNIVERSITY DEGREE?

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## **ABSTRACT**

In order to achieve a truly equality society, universities are making significant efforts towards gender mainstreaming. One of the main pillars of this approach is the implementation of a gender dimension in teaching. To assess the degree of progress towards this goal, suitable indicators, both qualitative and quantitative, are desirable. Surveys could be used to gather students' perceptions or educators' efforts as indicators, but an underutilised source of information is available in the teaching guides. Teaching guides are understood as those open-access documents where the public can find a subject's description, goals, and contents, among other university-specific features. The aim of the study is to analyse whether the teaching guides can become viable tools to assess the degree of implementation of gender perspective in university teaching.

In the present study, 16 teaching guides and their evolution over a five-week-long gender-in-teaching training program have been analysed using a combination of quantitative and qualitative methodologies. The former is based on participants' and the trainer's perceptions, while the latter is based on the appearance of gender-related terms within the teaching guide.

The results show how the teaching guide can provide evidence of the existence of a gender dimension within a subject, but also highlight the urgent need to train educators on how to include this dimension. Additionally, a systematic quantitative analysis of the teaching guides is proposed to assess the degree of gender dimension within a Bachelor's or Master's degree.

The present study might help academic gender policy design bodies to define strategies towards monitoring and promoting gender dimension in teaching. Furthermore, it provides university educators with indications of how to transform their teaching guides according to a feminist point of view.

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## **1 INTRODUCTION**

Gender mainstreaming in Academia means integrating a gender equality perspective at all levels, from governance to students and employees (Swedish Secretariat for Gender Research 2016). Here, the focus is put on gender dimension in teaching. It includes not only considering a gender equality perspective in the contents of the subject and teaching materials, but also the design and implementation of a wide variety of teaching activities regarding, for example, the distribution of the speaking time or the roles within a teamwork. Through teaching with a gender dimension one expects to reduce the gender biases among students, to avoid the stereotyped roles in teamwork, and, as a whole, to generate the proper atmosphere and culture to enable students to develop gender equality skills and to include equity in their future professional careers.

Gender dimension in teaching must affect the four teaching pillars being the contents, the learning environment, the methodology and the assessment. The introduction of a

gender dimension in the contents pillar is deeply topic-specific, for example, within a topic of air conditioning and heating in the heat transfer subject of engineering studies, gender biases could be identified in the temperatures of comfort imposed by the corresponding regulation. The learning environment with a gender dimension includes students' management, such as the gender distribution of participation, the roles chosen within a teamwork, etc. The gender dimension can enrich the chosen methodology, especially in those activities where student participation is relevant. Finally, the assessment can also include the gender dimension when considering the needs and preferences of all genders and when evaluating the gender-related activities included in the matter (Mas de les Valls and Peña 2022).

To achieve this goal, universities are offering educators trainings and guides. However, without a strong legal support the change will be minimum and driven only by a minority of educators. In this direction, a preliminary effort by the University Quality Agency in Catalunya (Spain) consists in requiring universities to include gender-specific learning outcomes wherever appropriate (AQU Catalunya 2018). An example of such a learning outcome could be to identify how gender influences the selection and usage of a given technique, or to understand the different needs and preferences according to the gender. This requirement from University Quality Agency in Catalunya (Spain) of introducing gender-specific learning outcomes is applicable for all university degrees, supervised during its accreditation but also at its follow-up (compulsory processes belonging to the quality assurance field). These gender-specific learning outcomes should be written in the public document where the subject is described, together with the goals, the methodology and other university-specific items. This document is hereafter called teaching guide.

As a consequence, a potential strategy to assess the degree of introduction of gender perspective in university teaching can be to analyse the teaching guides. However, the individual reading of such a massive number of documents is unaffordable. Following (Okoye et al. 2020) in their analysis of students' evaluation of teaching, innovative methods need to be developed to accurately extract gender information from the teaching guides and to transform it into actionable insights for decision-making. Such methods might rely in text mining methods, closely related to natural language processing (Pandey and Pandey 2017).

The main goal of the present study is to discuss the usage of the teaching guides as evidences for a systematic methodology to evaluate the degree of gender dimension implementation in a subject. It will be done based on the experience gained in an online 5-week-long gender-in-teaching training carried out at a public university in Spain, in October 2021. In this training, participants (all of them university educators) were asked to successively transform their teaching guides according to the concepts, activities and discussions carried out throughout the sessions.

Two research questions will be assessed: (1) Is the teaching guide representative of the degree of the implementation of the gender dimension in the subject? and (2) Could a systematic methodology be designed to evaluate the degree of gender dimension implementation in a subject through the analysis of the teaching guide?

The present study might help academic gender policy design bodies to define strategies towards monitoring and promoting gender dimension in teaching. Furthermore, it provides university educators with indications of how to transform their teaching guides according to a feminist point of view.

## **2 METHODOLOGY**

The gender-in-teaching training was focused on the transformation of the teaching guides. It consisted of 5 online sessions, spaced one week. Each session was 1.5 hours length and assignments were provided between sessions. There was a digital platform to exchange material such as bibliography, collaborative walls, forums, tasks and individual feedback. At the end of the training, each participant had a revised teaching guide of a their subject. To do so, a general teaching guide template was designed and provided to participants.

Sessions were designed according to the feminist digital pedagogy (Jiménez-Cortés and Aires 2021) using a student-centered approach (Wright 2011). The design of the training is a result of previous experience gained by the authors (Mas de les Valls et al., n.d.).

The total number of training participants was 22, being 86% women and belonging to diverse areas of knowledge, including humanities, social sciences, sciences, ICT (Information and Communications Technology), architecture and engineering. However, current study focuses on the 16 participants that carried out at least 3 of the 5 teaching guide assignments. This subgroup had 87% women and the area of knowledge of its members was also mixed. In fact, 69% belong to a STEM (Science, Technology, Engineering and Mathematics) area. According to the low number of male participants, and in order to preserve the anonymity of the participants, data is not disaggregated by sex or gender.

The degree of gender dimension in the teaching guide is carried out following a similar methodology as in the analysis of the students' evaluation of teaching in (Okoye et al. 2020). This includes the following items to be analysed:

1. The feasibility to introduce gender in the subject's contents. This feasibility is assessed based on the author's experience gained throughout their gender-in-teaching training activities. The subjects' feasibility was classified as High, Medium or Low. A High feasibility is provided to subjects strongly related to persons and their wellbeing such as health sciences, education, communication or even urbanism. However, pure sciences are typically associated with a low feasibility.
2. After a careful read of the teaching guides, the most frequent gender-related terms (GRT) are identified, together with the number of occurrences within the teaching guides in each assignment. An interesting starting point of such list of GRT is the one proposed in (Arias-Rodríguez, Fernández-Sánchez, and Lorenzo-Castiñeiras 2021). To simplify the categories, words' clustering has been used as shown in Table 1.

Table 1: cluster of GRT (gender-related terms) and their assigned weights

CLUSTER	GRT	WEIGHT
<b>GENDER</b>	Gender	3
<b>SEX</b>	Sex, sexual	3
<b>PERSON</b>	Person/s, personal	2
<b>USER</b>	Female user/s	2
<b>EQUALITY</b>	Equality, equalitarian, equity	2
<b>WOMAN</b>	Woman, women, female researcher/s, female scientist/s	2
<b>CITIZENSHIP</b>	Citizenship, female citizen/s	1

- The coherence throughout the final version of the teaching guide is qualitatively and quantitatively analysed. The qualitative analysis is based on the coherence between the teaching guide contents and the ideas or proposals commented individually with the participants through the training. In this sense, there was one collaborative activity, named Contents Wall, that was of great support. In the Contents Wall, each educator had to define a new teaching activity with gender dimension for his/her subject, with the support, ideas and suggestions of their mates (Mas de les Valls et al., n.d.). This qualitative analysis is supported by quantitative analysis regarding the GRT appearance. The overall result is hereafter identified as the performance of each participant. Accordingly, the overall performance of the transformation achieved by each participant has been classified as High, Incipient, and Stagnant, being classified as Stagnant those cases that either have interrupted the participation in the two latest deliverables or their progress has not evolved significantly.
- A quantitative estimator of the degree of gender dimension in the teaching guide is obtained from a weighted frequency of occurrence (WFO), being the weight defined according to the explicit relation of the GRT with gender or sex; i.e. a maximum weight of 3 is given to *gender* or *sex* clusters, as shown in Table 1.

### 3 RESULTS

The evolution of the frequency of occurrence of gender-related terms (GRT) along the four teaching guide deliverables is shown in Figure 1. The presence of these GRT is only considered when they appear in a context of gender or sex.

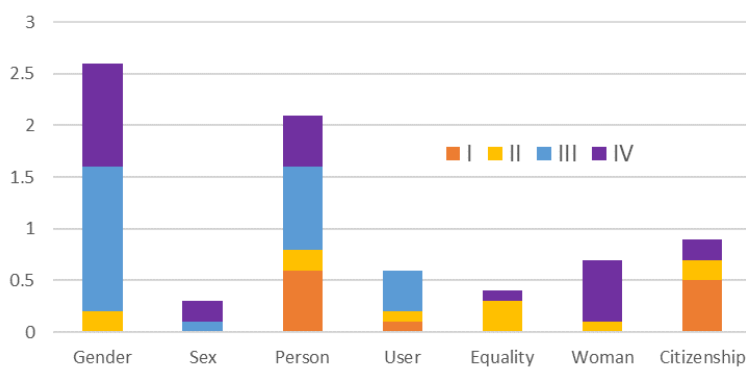


Figure 1: evolution of the GRT frequency of occurrence along different deliverables (I to IV)

A frequency of 0.8 means that, on average, each participant used that GRT 0.8 times in their teaching guide. It is evident that the GRT usage increases throughout the training, with a shift from more general terms (such as *person* and *user*) to more specific ones (such as *gender*).

Despite participants not being aware that this quantitative analysis was going to be conducted, the frequency of occurrence of each GRT might be strongly influenced by the facilitator's inputs throughout the training. For instance, after the first weekly feedback, *gender* and *equality* clusters start to appear. In the last deliverable (IV), female contributions or female case studies were explicitly introduced in the teaching guides, resulting in a significant appearance of the *woman* cluster.

Table 2 provides a summary of both qualitative and quantitative results. For each case, it shows the author's perspective on the feasibility of including a gender perspective in the subject, the initial and final weighted frequencies of occurrence (WFO), and the performance. Additionally, Table 2 indicates whether the participant actively contributed in the collaborative activity called Contents Wall.

*Table 2: summary of results for each studied case*

ID	FEASIBILITY	ACTIVITY	WFO <sub>i</sub>	WFO <sub>f</sub>	PERFORMANCE
1	High	Yes	7	41	High
2	Low	Yes	4	--	Stagnant
3	Low	Yes	0	1	Stagnant
4	Low	Yes	1	--	Stagnant
5	Low	No	0	--	Stagnant
6	Medium	Yes	5	49	High
7	High	No	6	12	Incipient
8	High	No	0	6	Incipient
9	Low	Yes	2	10	High
10	Low	Yes	1	3	Incipient
11	Low	Yes	0	2	High
12	Medium	Yes	0	2	Incipient
13	High	No	4	13	Incipient
14	High	Yes	0	0	Stagnant
15	High	Yes	1	58	High
16	Medium	Yes	2	--	Stagnant

As can be seen, participants are distributed quite evenly among the three performance types. Thirty-one percent of the participants show a *High* performance. This does not mean that the results are excellent on their own, but rather that a significant change is observed, and gender has been successfully included in the teaching design. In some cases, the subject easily allows for the introduction of the gender dimension, while in others, gender can only be included through a project focusing on a female referent, for instance.

Furthermore, 31% of the participants are considered to show an *Incipient* performance, indicating that they have defined a gender activity, but the educator has not yet consistently changed the teaching guide or made gender explicit. However, this group of educators has made some changes in their teaching guides concerning the inclusive language and/or the introduction of female authors in the bibliography.



One might assume that subjects with high feasibility would demonstrate better performance and, therefore, be classified as interesting. However, as shown in Table 2, the scenario is different. In fact, 50% of those participants with subjects classified as feasible only achieved a stagnant performance. Generally, participation in the collaborative activity increases the probability of success in the transformation of the teaching guide.

## **4 DISCUSSION**

### **4.1 Is the teaching guide representative of the degree of the implementation of the gender dimension in the subject?**

It is obvious that when gender explicitly appears in a teaching guide within a justified context, the subject includes the gender dimension. However, this does not necessarily mean that the gender dimension is implemented properly or that further development should be done.

Conversely, the opposite scenario is also possible. In some cases, gender does not appear in the teaching guide, but certain gender-related actions are taken during the development of the subject. For example, if female referents are introduced without explanation in the teaching guide, or if the students' learning regarding these gender actions are not evaluated, it represents an incorrect implementation of the gender dimension. Indeed, if it is not evaluated, it is not deemed relevant.

Following the Constructive Alignment theory from its holistical point of view (Loughlin 2021), when educators are aware of what a gender dimension in teaching means, the presence of gender-specific learning outcomes in the teaching guide is a good indicator that the gender dimension is properly implemented. However, among the 16 studied teaching guides, only 3 had learning outcomes that explicitly include a gender dimension. The other participants would require more time and support to further improve their teaching guides.

Therefore, some efforts must be taken before using the teaching guides as a tool to assess the degree of the gender dimension in a subject. Indeed, the majority of educators are still not aware of the meaning of a gender dimension in teaching, and those that are aware and attempt to change their lessons to promote equity are often not yet ready to transform their teaching guides without external support. Once sufficient trainings and continuous support are provided, then teaching guides will be representative of the degree of implementation of the gender dimension in a subject.

### **4.2 Could a systematic methodology be designed to evaluate the degree of gender dimension implementation in a subject through the analysis of the teaching guide?**

Let us assume that within an educational institution, enough gender-in-teaching training and support programs are provided to the teaching staff, making the teaching guide representative of the degree of the gender dimension in a subject. In such a scenario, how could the institution evaluate the degree of gender dimension in a

subject? Two potential tools could be used: (1) questionnaires to gather the students' opinions and the educator's intentions, and (2) the teaching guides themselves.

If a comprehensive analysis of the teaching guides needs to be conducted, a systematic methodology must be defined. An interesting approach would be to use the gender-related terms (GRT) and the weighted frequency of occurrence (WFO) as defined in the present study. However, a new question arises: What should be the threshold WFO value to determine that a proper introduction of gender dimension exists?

Considering that the sample size of 16 teaching guides is too small to draw robust conclusions, their analysis can shed some light to the potential of such a systematic tool. Table 3 displays the WFO according to the feasibility of the subject and the performance of the learning/transformational process. A general trend can be observed: a higher WFO implies a better introduction of gender dimension in the teaching guide. However, it is also evident that subjects with low feasibility will never reach significantly high WFO values. Hence, for a systematic analysis of the teaching guide, a preliminary step is required: all subjects must be classified based on their feasibility to include gender dimension. This classification should be conducted by an expert and should motivate gender-unexperienced educators teaching subjects with high feasibility to enroll in a gender-in-teaching training and support programs.

*Table 3: final available WFO of each teaching guide classified according to the subject's feasibility*

FEAS./PERFORMANCE	HIGHG	INCIPIENT	STAGNANT
<b>HIGH</b>	41, 58	6, 12, 13	0
<b>MEDIUM</b>	49	2	2
<b>LOW</b>	2, 10	3	0, 1, 1, 4

However, this methodology has a potential drawback. Educators may include GRT in their teaching guide without proper contextualisation or without a genuine interest in introducing the gender dimension in their teaching. This risk of transforming an educational tool into an administrative hurdle has been previously highlighted in the revision of the constructive alignment theory (Loughlin 2021).

Additionally, within a team of educators sharing a subject and, therefore, sharing a teaching guide, different levels of gender awareness might exist. Hence, the proposed methodology should also be verified using appropriate students questionnaires.

## 5 SUMMARY

The transformation of the teaching guides for 16 subjects has been analysed within the framework of a gender-in-teaching training program for university educators in a Spanish university. It has been observed that with proper support, educators can successfully transform their subjects to coherently include the gender dimension. This coherence extends to the transformation of the teaching guides.

Once sustained support is provided to educators, teaching guides can be used in a systematic analysis to quantify the degree of the gender dimension in a given degree program. This comprehensive and systematic analysis could be done based on: (1) a preliminary classification of the subjects according to their feasibility to include the gender dimension, which should be conducted by an experienced gender-in-teaching trainer, (2) the weighted frequency of occurrence of selected gender-related terms, and (3) the students' experiences gathered through a questionnaire.

As a result of this transformation, students could benefit from a more personalised and inclusive learning experience.

## 6 ACKNOWLEDGMENT

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