Online forums in Higher Education: empowering female participation

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Abstract. Forums are widely available tools in educational platforms, but there is no consensus on their benefits. This paper is aimed at investigating students attitudes towards online forums, the content contributions published and if forums promoted a more equal participation between male and female students. The final evaluative syntheses of the students (n=55) and the posts published in one forum (n=49) were analysed. The results indicated that the students had positive attitudes towards forums, with male students being more critical. The content contributions consisted mainly of reflections and affirmations. Female students were as actively engaged in discussions as male students, increasing their participation when compared with the practical lessons. This study is limited by its sample size and by the fact that only one analyst coded the material. Further investigation is required to know if male and female students have different patterns of publishing.

Keywords: Forums, Higher Education, digital media, sex inequality

1 Introduction

In the last decades, economically developed societies have gone through a migration process of many of their basic structures, including not only finances or bureaucracy, but also human communication and socialization. Eventually, education, including Higher Education institutions, also reflected and took part of this unfinished digital metamorphosis.

Digital and technology-enhanced learning (web-based learning) could be an ally to change the landscape of teaching and learning in Higher Education. Nonetheless, evidence shows that the integration of digital media in pedagogic settings still faces several obstacles [1, 2]. While technological issues or insufficient training are often said to be the very own causes of misuse or incipient use of digital tools in education, the picture seems to be more complex, involving psycho-sociological factors, such as attitudes and values [3]. Furthermore, the benefits of the digital media to the

effective empowerment of citizens (including students) are disputable, particularly when one things of minority social groups [4], *i.e.*, groups with less power, such as females.

Despite important progresses towards sex equality, there is still a gap in female participation in several social spheres, from politics to science. In fact, although the number of female students in Higher Education has been changing dramatically [5], recent studies confirm that it is still hard for them to have access to scientific careers, because of bias selection and gender stereotypes [6, 7]. Scientific production also mirrors the predominance of male researchers [8]. Not surprisingly, educational settings and classroom context reflects this trend, which is probably anchored in gender stereotypes, but also in classroom culture [9].

Despite of this, successful experiences do take place – involving both teachers and students – where communication is triggered and directed to educational discussions. This was the case of a course at the Faculty of Science of the University of Porto where virtual forums where used, getting as much participation as lectures and practical lessons. As time passed by, we observed that, in the context of lectures and practical lessons, male students engaged more actively in collective, oral discussion. This is a problem if one wants to empower all students as equal to participate in the political and scientific debates of contemporary society. Is it possible that female students participate more actively in the course's digital forums? By looking closely to students' attitudes and content contributions on the course forums, we were aimed at understanding if forums enabled female students to participate at least as actively as their male colleagues in the discussion.

The results of this research showed that students acknowledged the value of the forums as an alternative means to express themselves and know the others' perspective on relevant topics. The number and types of content contributions to the course's forums of female and male students were very similar and, as such, one can say that female students became more actively engaged in the digital forums. This research demonstrated that forums about relevant topics can be an important feature to include in the design of a Higher Education course, and, furthermore, that they seem to empower female participation. The question for future research is to understand if the digital participation transubstantiates into a more active engaged in non-virtual forums.

In the next section, we started by offering the reader a review of the relevant literature to investigate the relationship between the use of forums and sex inequality. In section 3, we described the research methods. In section 4, results were detailed exposed while in section 5 we discussed their meaning. In section 6, conclusions, limitations and future studies were presented.

2 Related work

Forums are widely present in online learning and blended-learning and are perceived as useful tools to use in Higher Education [10]. In fact, they are technological

tools that integrate most Learning Management Systems (LMS) (such as Moodle, Canvas or Blackboard) by default. As boundaries in Higher Education institutions become wider, forums have become the object of a growing interest by researchers [11].

In a recent survey of the Portuguese scientific production indexed in SCOPUS and Web of Knowledge on the topic of "online learning", Morais, Moreira and Paiva [12] showed that forums were an important source of data. For example, they provided researchers with facilitated access to students' or trainees' thoughts and ideas on several issues, such as training itself or general social topics; these thoughts and ideas were not directly enquired on but indirectly retrieved from users' entries (*i.e.*, posts published in forums) and were, for that reason, context-dependent.

LMS, such as Moodle, which incorporates forums, have been criticized as being old and ineffective tools with several limitations in environments that are increasingly open and connected [13] or, to use an expression borrowed from Jenkins [14], in a participatory culture. This is not the time or place to analyse this question, but one should not let it go without referring that the question is being asked in a naïve manner. In fact, as in this research we were focused on the students' attitudes towards forums, we aimed at getting new insights on what made the forums a successful tool in the context of this specific course.

Researchers have been looking at forums with a diversity of purposes. Some authors have been more interested in understanding interaction patterns [15]. Other authors have been more interested in understanding the development of collaborative work and what patterns emerge when they use text analysis [16], on facilitating online discussions [17] and knowledge building [18]. In this research, we were mainly interested in the type of contributions that students published in the forums.

Based on her pedagogical practice, Hughes [19] started to ask students to identify what type of content contributions they have written before they published in the course's forums (see Table 1). This proposal has not yet been tested, and, consequently, this research aimed at capturing its heuristic value to categorize students' posts.

The studies available do not solve the controversy on whether or not digital forums help equalizing the participation between sexes. For instance, His and Hoadley [20] supported the view that male students were more actively engaged in productive scientific discussion through electronic forums. Lim and Nahyun [21] also found that males seemed to appreciate more and have more chances to develop literacy skills than females by using Wikipedia. On the other hand, Prinsen, Volman and Terwel [9] showed that the picture is more complex. They reviewed a set of studies that focused the behavior of male and female students both on computer-mediated communication (CMC) and on computer-supported collaborative learning (CSCL) and found that there were differences in the degree and type of participation between sexes. Male students tended to be more actively engaged in CMC while in CSCL the situation were more balanced, although male students were more assertive in their statements and female more prone to agree. In another recent study, the same authors [22] found out that girls profit more than boys from participating in the elaboration of a programme in CSCL-environments, although this effect may be

connected with stereotyped patterns of communications (girls tend to ask and elaborate more than boys). Consequently, more research is necessary to understand if online forums can equalize male and female students and that is why it is important to study not only the degree but also the type of participation as we aimed at doing.

Table 1. Types of content contributions
(Hughes [19])

Category	Definition
a. Reflection	comments and initial thoughts, especially when asked to initially reflect about a course reading
b. Expansive Questions	about the content read or ideas posted by others; i.e., questions that spur others to think about or explore deeply the content or other ideas perhaps by using comparisons or metaphors
c. Substantive Insights	on the content read, including reinterpretations with the use of personal/ outside examples
d. Collegial Challenges	on the content read or ideas posted by others; i.e., disagreements with specific support for your perspective
e. Personal Realizations/Transformations	explicating significant shifts in your perspective on the topic due to the readings or the discussion
f. Clarification	about the question or comment posed – respondent feels clarification is needed before being able to respond
g. Affirmation	of ideas that participant has posed, including reasons why the respondent agrees or affirms the ideas.
h. Connection	to other peers' or the instructor's posts. You may direct readers to another post with similar ideas and content as your own or make a comment that connects or extends another person's ideas while explicitly acknowledging the connection.
i. Reiteration	when you are unsure of the meaning of a post, you may reiterate back to the poster what you think they mean, asking them to check if your interpretation correctly captures their intended meaning.
j. Summary/Wrap Up	often used by the instructor or moderator of a topic to summarize or bring together ideas across the discussion or part of the discussion.

In the next section, we will try to describe the methods used and the research questions that guided this research and that operationalized this problem within the specific context of a higher education course.

3 Method

This was a non-experimental, exploratory research, which used a qualitative methodological approach. In the following lines, we indicated the research questions,

described the context where the study took place and its participants, *i.e.*, students enrolled in the class, as well as data collection and data analysis procedures.

3.1 Research questions

Keeping in mind the empirical observations we have made on the students' participation and the scientific literature reviewed, we were not able to formalize clear hypotheses, but we were able to identify the following research questions:

1. What were the students' attitudes towards the course's forums?
2. What type of content contributions did male and female students published in the course's forums?
3. What was the heuristic value of Hughes [19] content contributions categories?
4. Did the forums empowered the participation of the female students?

3.2 Context and participants

This investigation occurred within the context of a Higher Education optative course on Personal and Professional Development at the Faculty of Sciences that took place in the 2nd semester of 2013/2014. Lectures consisted of a series of weekly seminars on topics such as employability, science and religion, scientific production, with invited speakers, followed by discussions. Practical lessons were supported by group dynamics and addressed personal and professional development topics, such as effective communication, group collaboration and time management. There were also virtual lessons that took place in the course's Moodle platform.

Students were required to participate in the forums discussing either the topics of the seminars or the topics of the virtual practical lessons. Each forum had a foreword written by the teachers. When the forums were about the seminars, students were asked to share their personal comments on the topics; whenever the forum was part of a virtual class, guidelines were given in a more detailed way and other resources were presented, such as further reading or videos. Students were informed that their participation in the forums was to be reflected in their final course grade.

Table 2 shows the distribution of students and final synthesis by gender and programme. As one can observe in Table 1, 83 (nearly 61%) students were female and 54 (nearly 39%) were male; the great majority of them were enrolled either in Biology (51 students, nearly 37%), Chemistry (41 students, nearly 30%) or Mathematics (28 students, nearly 20,4%), while the others were distributed by other programmes.

Table 2. Distribution of students by sex and programme

Variables		Students enrolled
		Frequency (%)
Sex	Female	83 (60,6%)
	Male	54 (39,4%)
Programme	Landscape Architecture	1 (0,7%)
	Biology	51 (37,2%)
	Biochemistry	2 (1,5%)
	Engineering Sciences	4 (2,9%)
	Earth and Environment Sciences	6 (4,4%)
	Geology	1 (0,7%)
	Mathematics	28 (20,4%)
	Chemistry	41 (29,9%)
	Mobility	3 (2,2%)
Total		137 (100%)

3.3 Data collection and data analysis

The data included (1) the personal syntheses of the students (no more than one page) that consisted in a reflection on their participation in the course and (2) the online forums of the course's Moodle platform.

A qualitative analysis has been conducted using NVIVO 10 for Windows, a qualitative data analysis software. Final syntheses and forums were retrieved from the course's Moodle platform and inserted into the software. After a preliminary and exhaustive reading, the *corpus* of analysis was constituted by means of a query that identified the content associated with forums using the following key-words: "fóruns OR forum OR fórum OR forums". We should remind the reader that the course was given in Portuguese.

Table 3 shows the initial material available and the *corpus* that was further analysed. Initial material consisted on the personal evaluative synthesis that each and every student was asked to write. The *corpus* that was further analysed only encompassed the syntheses that contained at least one reference to the forums. The context unit was the surrounding paragraph of the coding unit. Following Bardin [23] we define context unit as the unit that allows us to understand the meaning of the coding unit, in this case the theme. The coding unit is the segment of the *corpus* of analysis that is to be categorized and that ultimately can be counted. A theme is a nucleus of meaning that can be identified by the criteria specified by the analysts. In this case, we did not use *a priori* categories but instead we followed an approach inspired by the grounded-theory [24] according to which a constant revision method was used to reorganize categories as they emerged from the analysis. The categories used were attitudes, *i.e.*, "a psychological tendency, that is expressed by evaluating a particular entity with some degree of favor or disfavor" [25, p.269]. The *corpus* included 35 (63,6%) final syntheses from female students and 20 (36,4%) from male students.

Table 3. Material available and *corpus* of analysis

Variables		Material	*Corpus*
		Frequency (%)	Frequency (%)
Sex	Female	70 (64,2%)	35 (63,6%)
	Male	39 (35,8%)	20 (36,4%)
Total		109 (100%)	55 (100%)

Aside forums that were used to discuss doubts or to deliver group works, the course had 11 forums. As this is an exploratory study, we selected only the forum that had more visualizations (3041 views) to analyse. At this forum, 49 posts were analysed (19 new entries and 30 replies or threads). The context unit was the thread or, if necessary, the group of threads that followed a new entry, while the coding unit was the type of content contributions according to Hughes' proposal [19] (*vide* Table 1 in section 2).

4 Results

As we mentioned in the previous section, forums were highly participated. Students not only published their forums as they read other students' contributions. In this section, we presented the results obtained through the qualitative analysis. In the first place, we were aimed at mapping the attitudes of the students towards the course's forums and eventually to verify if we could find any sex-based effect.

Table 4 shows the attitudes towards forums (total and by sex) that were coded in the personal evaluative syntheses. We coded every segment of text that expressed a positive or negative view towards the forums as an attitude (coding unit). In the Table 4 we indicated the number of sources where a specific attitude was found.

As one can observe, there are more total sources coded with positive attitudes than sources coded with negative attitudes. Not only is this true, as when we look closely to the negative attitudes we can see that the majority was connected with the perceived participation, *i.e.,* specific references that the students made on their own participation. Sometimes, students, admitted that they could have been even more actively engaged in the discussions. A few students criticized the eventual redundancy of the topics, they showed surprise for they did not expect that their participation in the forums was so hard, they wished the discussions were more controversial and finally one student simply did not like this modality of communication.

On the other hand, positive attitudes did not refer only to the strong participation or commitment with the activities but they also enlightened the relevance and novelty of the themes proposed by the teachers and they explicitly referred a few personal development benefits that they took from their participation: dialogue and meeting other's perspective, self-expression and improvement of their writing skills.

Table 4. Attitudes towards forums

Evaluation	Attitudes	Male students (Sources coded)	Female students (Sources coded)	Total (Sources coded)
Positive	Participation	6	10	16
	Relevance	3	12	15
	Dialogue/Meeting others' perspectives	3	10	13
	Self-Expression	4	4	8
	Improving writing skills	2	3	5
	Total	12	27	39
Negative	Less participation	7	6	13
	Scheduling of post	2	1	3
	Redundancy	0	1	1
	Work	0	1	1
	Uninteresting	0	1	1
	Lack of contradictory	1	0	1
	Total	10	10	20

Female students showed more favourable attitudes than unfavourable attitudes towards forums. This is not surprising because 64,2% of the material analysed was written by female students who were also in majority in the course. It is, however, interesting that this proportionality was not mirrored in the negative attitudes towards forums.

Table 5 shows the students' contributions to the forums. Both female and male students published new entries and replies to previous posts in the same degree.

Table 5. Contributions

Type of entry	Male students Sources coded (%)	Female students Sources coded (%)	Total Sources coded (%)
Reply	11 (36,7%)	19 (63,3 %)	30 (100%)
New entry	7 (36,8%)	12 (63,2%)	19 (100%)

Table 6 shows the students contributions (total and by sex). Not surprisingly, reflection was the most common type of content contribution. It was often the first contribution published by male and female students alike. Affirmation was the second more common type of content contribution, *i.e*., students agreed with the ideas expressed by their colleagues. It was not possible to find significant differences between male and female students in their publishing patterns, considering the relative percentage of male and female students in the course. Content contributions, such as clarification, collegial challenges, personal realizations/transformations, reiteration or substantive insights cannot be taken in consideration because they were less used.

Table 6. Students contributions (total and by sex).

Type of content contribution	Male students Sources coded	Female students Sources coded	Total Sources coded
Affirmation	8	10	18
Clarification	0	3	3
Collegial challenges	2	2	4
Expansive questions	2	4	6
Personal realizations/transformations	1	3	4
Reflection	8	12	20
Reiteration	1	0	1
Substantive insight	3	2	5
Total	25	36	61

5 Discussion

The results obtained by means of a qualitative analysis indicated that the students enrolled in the course had mostly positive attitudes towards the course's online forums (*vide* research question 1). The perceived participation, relevance of the themes, dialogue and meeting others' perspectives, self-expression and improving writing skills were greatly valued.

The content contributions of the students comprehended fundamentally reflections and affirmations, although expansive questions, substantive insights and personal realizations were also found (*vide* research question 2). Currently, another research in which we are involved is trying to understand if it possible to instigate students to employ more complex types of content contributions in order to improve the quality of the forums by asking them to code their own contributions before publishing.

The current research let us confirm that the content contributions categories proposed by Hughes [19] provided a good framework since it was not necessary to add any other category to the list and since all the categories were used during the coding process, excepting the summary/wrap up category (which was intended to capture the teachers' posts) (*vide* research question 3).

We were not capable of finding any significant difference between male and female students' positive attitudes. This is not to say that their evaluation was identical. As a matter of fact, male students were more critical about forums in that they referred as many negative points as their female colleagues.

Overall, forums were probably more interesting to female students (*vide* research question 4). Why is that? The data retrieved from the final synthesis could be biased since it refers to personal views. We had to look at it cautiously, although the qual-

itative analysis suggested that forums provided an environment where female students felt more comfortable to share their thoughts and ideas. This result was in part consistent with Prinsen, Volman and Terwel [22].

The analysis of the most participated forum was important to estimate if female students were in fact more actively engaged in online discussions when compared with their engagement in the practical lessons. We did not expect that they participated more than their male colleagues, but we would hope that they participated at least as actively as them. New entries were as important as threads. Looking at the relative percentage of the female and male new entries and threads we are not able to identify any difference. In fact, the percentage of new entries and threads published by male and female mirrored the percentage of male and female students in the course. This result might mean either that there are no differences between male and female patterns of publishing or that the eventual differences have to be investigated further. The results that we obtained in some content contribution analysis are based upon insufficient cases.

6 Conclusions

In this paper, we were aimed at understanding how Higher Education students perceived their participation on mandatory forums in the context of an optative course and if female students were more actively engaged in the forums.

There is a great dissension on scientific literature on the benefits of digital media and, specifically, on educational settings. Are digital media capable of equalizing and bridging sex-based unbalances?

Our results give us a few reasons to think that forums might be useful to promote personal development in the context of Higher Education and empower female students to actively engage in discussion. In the first place, attitudes towards forums were positive: students considered that they allowed them to meet other's perspectives. This is of utmost importance in a globalized and plural world. In the second place, female participated as much as male in online forums and eventual differences were not identifiable. This is relevant because they did not have a similar behaviour in the practical lessons, but this is also insufficient. Digital media should not only be capable of providing female students with a more comfortable environment but they should empower them to reconfigure their non-virtual participation in discussions. This was, however, beyond the scope of our present research.

This research is considerably limited. The most relevant limitation is that the coding process was done by one analyst alone and, consequently, the validity of the present results was threatened. The fact that we only analysed one single forum, although the most participated one, is another limitation. In fact, one cannot tell for sure that results would be similar to those that we presented in this paper if other forums were analysed.

These are, nonetheless, preliminary results and future developments must necessarily address the limitations that we stressed by asking other analyst to review the

present coding and by including all forums in the analysis, eventually, using the theoretical saturation principle to determine when no further entries need to be analysed. This trend of research also needs to be deepened and, currently, a larger team is trying to understand whether forum contributions are improved by asking students to self-coding their own posts with the categories proposed by Hughes [19] before publishing them and if any sex effect is associated with students performance in these tasks.

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