

**ECER 2017**

Investigating Gender in Educational Practice and Theory  
Network 27: Didactics, Learning and Teaching

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# **SPOC-supported course for promoting gender diversity in ICT careers**

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# Outline

1. Introduction
2. Research design
3. **SPOC** (*Small Private Online Course*) **description**
4. **Impact of the course on students' representations**
5. **Analysis of the course from a feminist pedagogy viewpoint**
6. **Pedagogy for effective online course**
7. **Conclusion**

# 1. Introduction

## ■ Enduring issue: Gender gap in ICT, mainly due to

- the masculine culture in education and work environments  
(Faulkner 2011; Margolis&Fisher 2003)
- the persistent gender stereotypes that depict women as technologically incompetent  
(Clayton et al. 2012)

## ■ Previous research on our campus

- the ICT & gender stereotype still prevalent among students
- mechanisms to alter the status quo exist

(McDonnell & Morley 2014; Morley & McDonnell 2017)

## ➤ To reinforce deconstructing the ICT & gender stereotype in our students' representations

- **online course**

‘Feminine-Masculine in the digital world - a journey of discovery’

## 2. Research design

### Three sessions

2016: February - May

2016: September - December

2017: February – May

### About 40 students per session

approximatively 50% male, 50% female

divided into subgroups of 3 or 4

### ➤ Reflexive analysis exploring three research questions

1. Has the course contributed to weakening the gender stereotype that links technology and masculinity in the participating students' representations?
2. Was our pedagogy a feminist pedagogy, i.e. a pedagogy aiming at more equality between women and men?
3. Did we comply with principles for an effective online course?

# Data collection

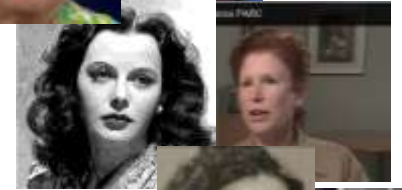
- All documents posted by students (written assignments and interactions on forums), and the essays written by students in the students' final exam essays
  
- Questionnaires: Open-ended questions
  - In general, did you watch the videos or read the associated texts?
  - Did you check teachers' feedback on assignments?
  - Which assignment did you enjoy best, and which least?
  - Do you prefer individual or group assignments?
  - What surprised you most about the course?
  - How have you benefitted personally from the course?
  
- Questionnaires: Closed questions
  - Before the course, I was unaware of IT & gender stereotypes.
  - The course has motivated me to pursue a career in the digital world.
  - My representation of the digital world has become more inclusive.
  - I discovered the negative impact of gender stereotypes in the computing world.

Questions on online compared to face-to-face courses were also included.

### 3. SPOC (Small Private Online Course) description

#### ■ Course Content

1. Women in the history of IT
2. Women in IT careers
3. Social (de) construction of gender & IT stereotypes



# Weekly assignments

## ■ To be completed individually

- *Select one female computer scientist from the lecture, find a video or a website on her, and write a short commentary.*

## ■ To be completed in small virtual group

- *Watch the video [Grace Hopper, The Queen of Code](#). Then, select a woman from the computing field, who would be at the centre of an event similar to Grace Hopper Celebration. Indicate why this celebration could inspire today's women in the ICT field.*

## ■ Forum

- *Write 10 to 15 lines on your first experience with computing (when? how?), and indicate whether it has been a positive or a negative experience for you. Then read other participants' experiences, and interact.*



- **In the third session,**

- A quiz
- A peer assessment

- **Final exam:**

- 20 multiple-choice questions,
- short essay on the following topic:

*“In your view, what should be most favoured in order to improve gender diversity in digital jobs?”*



# 4. Impact of the course on students' representations

No prior knowledge on gender & IT stereotypes

25%

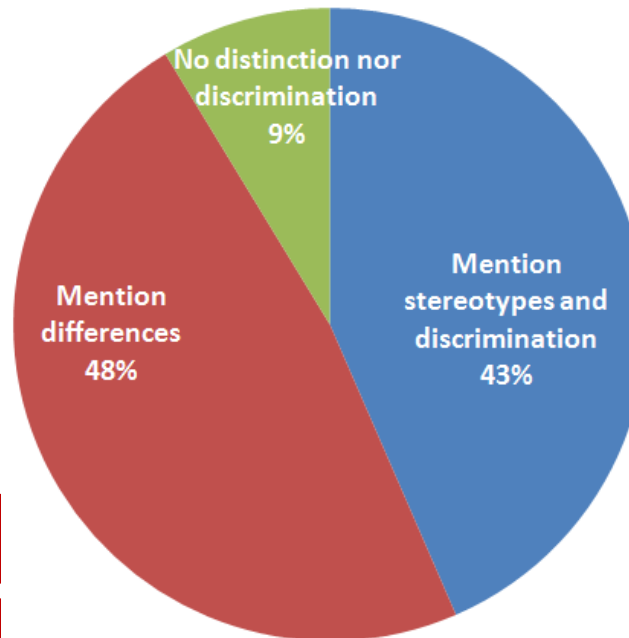


## ■ At the beginning of the course

- each student was asked to write a few lines on 'feminine-masculine in the digital world'

*Maybe it is the only place with no gender distinction*

*I can't imagine any gender discrimination in the IT world*



*Significant salary gaps*

*Negative stereotypes of women*

*Women and men are not interested in the same things*

*Women are less involved in digital interactions, men are more so*

# Students' representations of gender & IT relation

I have a better idea of the complexity of the gender & IT relation  
94%



## ■ Indeed

- In the final essay, all students refer to the social construction of the gendered digital world
- Explanation: little theory on gender, but many concrete facts (persons, historical situations, pictures from magazines etc.) and personal web searches, help students understand what gender **does** to people (Poulin-Deltour 2014)

## ■ However

- At the end of the course, each student group was asked to analyse a visual document (poster, commercial clip...) from a gender perspective
  - Most of them have chosen documents with **openly sexist** characteristics
  - A small minority came to realize that stereotypical allusions can be hidden

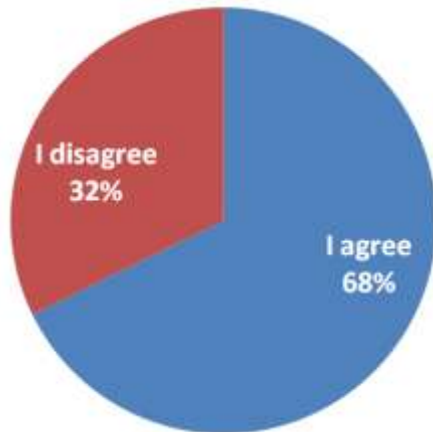


# Students' representations of the digital world

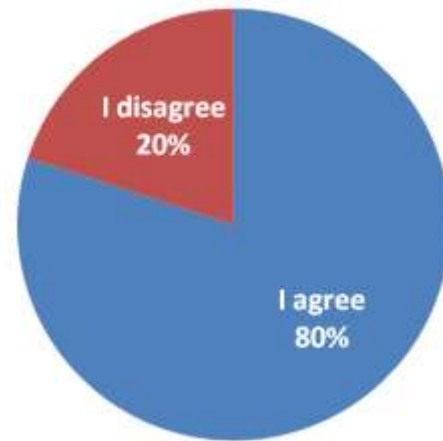
**My view of digital world has become more inclusive 75%**



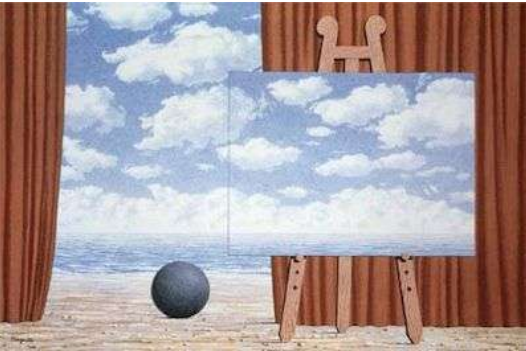
**Men: 68% agree**



**Women: 80% agree**



# 'What has the course brought you personally?' (2/3 men, 1/3 women)



Magritte «Everything we see hides something else»

I have a more critical approach to advertising and magazines etc. but also greater awareness of the stereotypes that I myself may convey

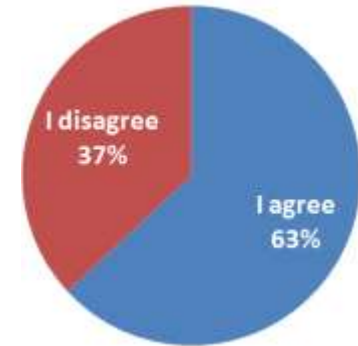
A different approach to everyday life commercials and posters, they can be misogynist

A wider vision of gender equality issues in the IT world

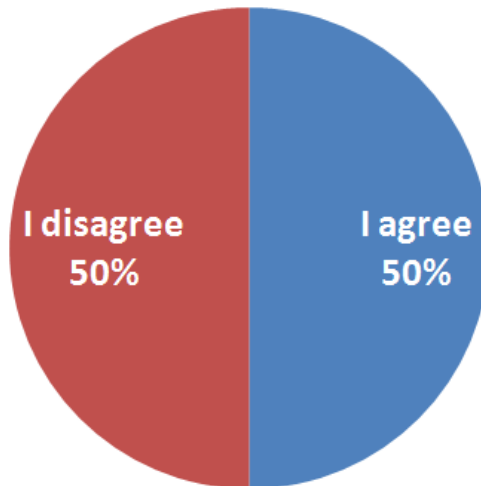
A critical view of today's world, and a better understanding of gender in the digital world

# Increased interest for IT field

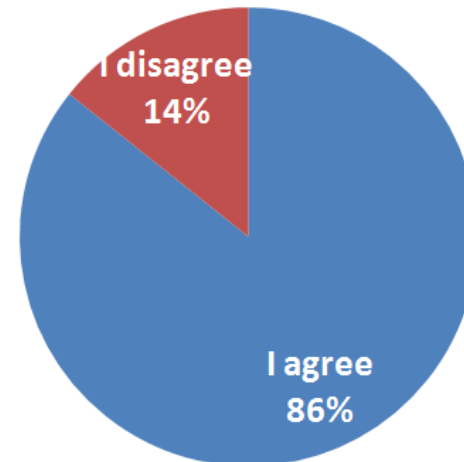
I feel more motivated to working in IT jobs 63%



Men: 50% agree



Women: 86% agree



# 5. Analysis of the course from a feminist pedagogy viewpoint

## ■ 5.1 Feminist pedagogy

- Educational settings are microcosms of broader social arrangements, such as sexism and racism (Forrest & Rosenberg 1997).
- Objective: create a learning environment where norms, values, and practices are inspired by gender equality

But learning is a place where paradise can be created. The classroom, with all its limitations, remains a location of possibility. In that field of possibility we have the opportunity to labor for freedom, to demand of ourselves and our comrades, an openness of mind and heart that allows us to face reality even as we collectively imagine ways to move beyond boundaries, to transgress. This is education as the practice of freedom.



bell hooks (1994) Teaching to transgress: Education as the practice of freedom.



## 5.2 Compliance with the principles of Feminist pedagogy

### 1. Empowerment

- **Knowledge acquisition** on female accomplishments in IT
  - Vicarious experience



# 'What has the course brought you personally?' (30% women)



Marcello (Adèle d'Affy),  
Bianca Capello

Dynamism

Personal motivation to succeed in the IT field

I probably feel more willing to "fight" against gender inequalities in our society

Now, as a woman and a future engineer in the digital world, I really want to get a place in this masculinised field, and I also feel more self assured







# Compliance with the principles of Feminist pedagogy (end)

## 2. Giving room to individual voices

In weekly assignments, each participant had to write something down, and feedbacks ensured that everyone was cited at least once

- Recognition of everyone's personal contributions

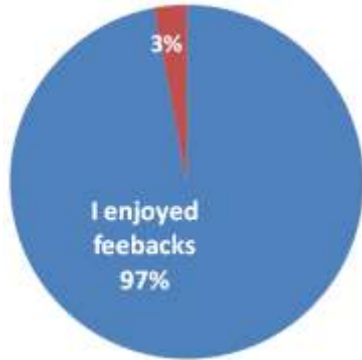
*It is a recognition*

*They were often very positive and benevolent*

*Our work really was monitored*

- Higher degree of attention to others' opinions than in a face to face classroom

*Interesting to see if I had written something similar or different from other students*



## 3. Challenging traditional views

- Many students were surprised that most of the content of the course was largely unknown by most people

*Female computer scientists;*

*Female hackers;*

*So many women attracted to ICT*





## 5.3 Noncompliance with the principles of Feminist pedagogy

- 1. Reformation of the relationship between teacher and student**
  - Teachers did not share the roles of knowledge expert and decision leader
  - Teachers were leaders, not advisors/consultants
- 2. Building a community**
  - Many were interested in reading other students' contribution in the feedbacks, but no direct interaction
  - Little sharing in the two discussion forums
  - The group has not become a community
- 3. Respect for diversity of personal experience**
  - Varied backgrounds and culture in the group were not highlighted

# 6. Pedagogy for effective online course

## ■ 6.1 Presence issues

- A learning experience takes place within a community of participants (teachers and students)
- Successful online higher educational experience requires 3 interacting core elements

**Cognitive presence**

students' involvement in learning and inquiry processes

**Social presence**

students establishing personal relationships within the community

**Teaching presence**

teachers directing and facilitating cognitive and social presence

Garrison, D. R. (2007). Online community of inquiry review: Social, cognitive, and teaching presence issues. *Journal of Asynchronous Learning Networks*, 11(1), 61-72.



## 6.2 Compliance with Garrison's framework

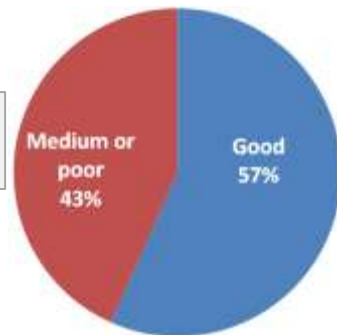


### ■ Cognitive presence

- Homework revealed students' curiosity and their personal web searches (e.g. on female hackers; on #ILookLikeAnEngineer movement on social media)
- Individual and group work helped students to understand fundamental concepts, as most final essays showed

### ■ Social presence

**Level of interactivity between students good 57%**



*Other students' approach is often more interesting than mine*

*Interaction allows more in-depth analysis*

*We can confront our opinions*

*It was a good opportunity to work with a team, which is crucial to succeed in professional life*



# Teaching presence: compliance

## ■ Posting a weekly follow-up table

	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8	Session 9	
Prenom	activité	activité	activité en sous-groupe	forum	activité en sous-groupe	activité	activité	correction	activité	quizz
YI HONG	😊						😊		😊	😊
YASMINA	😊	😊	😊		😊	😊	😊	😊	😊	😊
LAURIANE	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
VALENTIN	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
Leila	😊	😊	😊	😊	😊	😊		😊	😊	😊
Ahmed	😊		😊	😊	😊		😊	😊	😊	😊
Nicolas	😊	😊	😊	😊	😊		😊			
SAJETHA	😊	😊	😊	😊	😊	😊	😊	😊		
Paul										
Thomas	😊	😊	😊	😊		😊	😊	😊		😊

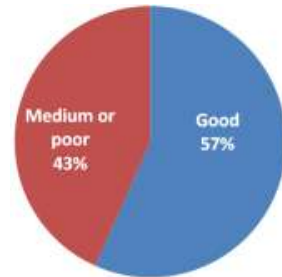
- **Clear guidelines** at the beginning of the course (objectives, organization, grades etc.)
- **Posting messages** each week at the opening of the new session and new assignment
- **Individual feedback** to student emails sent to teachers
- **Feedback on homework** assignments

## 6 .3 Noncompliance with Garrison's framework



### ■ Social presence

Level of interactivity between students medium or poor 43%



*Hard to work with people who do not have the same **timetable***

*Hard to work with people you do not **know***

*Some group members wait until the **last moment** to start doing their work*

*Sometimes we don't dare to **contradict** others*

*It can be **embarrassing** to know that everyone could read what we write on a forum*

## Teaching presence: noncompliance



- **No teacher involvement in discussions on forums, e.g.**
  - Focusing the discussion
  - Summarizing the discussion
  - Confirming understanding and so on
- **No teacher involvement in subgroup activities, apart from**
  - Assigning students to groups
  - Exceptionally moving a student from one group to another if he/she complains

## 7. Conclusion

- **Online course proved to be interesting for teaching gender and achieving changes in stereotyped representations**
- **Building from both feminist pedagogy and tenets for effective online course, areas for improvement**
  - Redefine teacher's/tutor's role
  - Make increased use of students' knowledge and experience
  - Make student diversity more visible in a positive way
  - Help build a community
    - Better setting up and monitoring of working groups
    - Being active in large group activities (forum)



Thank you!

Discussion

