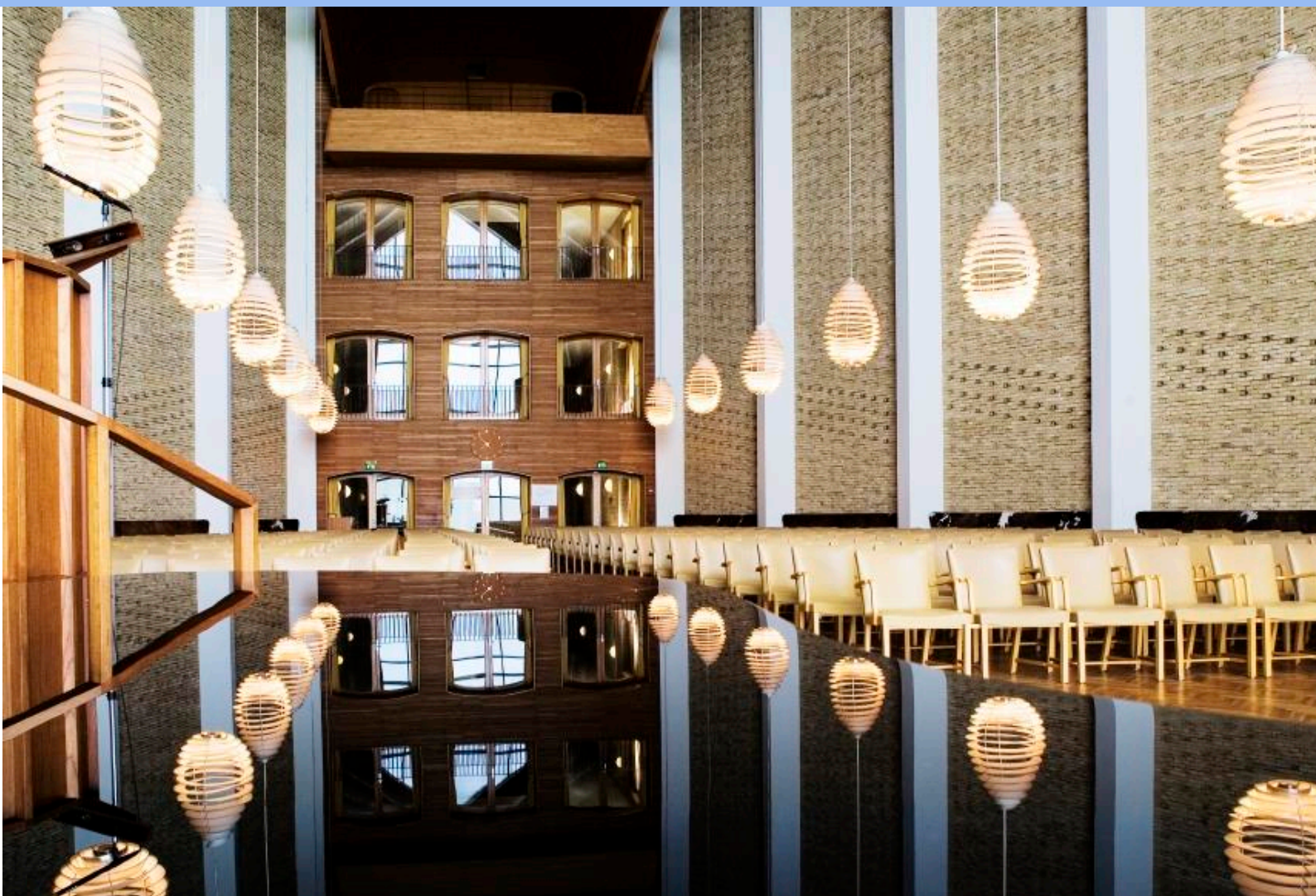


# Conference Proceedings

The Online, Open and Flexible Higher Education Conference

Hosted by Aarhus University, Denmark

10-12 October 2018



Blended and Online Learning:

“Changing the Educational Landscape”

# Blended and Online Learning

## “Changing the Educational Landscape”

Overview of papers on Higher Education for the Future as presented during the Online, Open and Flexible Higher Education Conference in Aarhus, October 2018

Editors

George Ubachs | Managing director EADTU

Fenna Joosten-Adriaanse | Event Organiser EADTU

**EADTU, October 2018**

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## Foreword

### Welcome to the OOFHEC2018 in Aarhus

Aarhus University in Denmark was the perfect academic setting for EADTU's Online, Open and Flexible Higher Education Conference 2018 (**OOFHEC2018**), bringing together key players in innovating education within the scope of this year's conference:

#### **"Blended and online Learning: Changing the Educational Landscape"**

Contributions in plenary and parallel sessions focussed on three emerging areas of provision in higher education: degree education, continuing education and continuous professional development and open education.

Blended and online systems are important to accelerate innovation and to keep pace with the needs of learners of all ages and of society. New modes of teaching and learning create new opportunities for enhancing the quality of the learning experience in on campus programmes, reaching out to new target groups off campus and offering freely accessible courses nationally or worldwide through the internet. They enhance the quality, visibility and reputation of the institution. The implementation of new modes of teaching and learning requires institutional strategies and frameworks. It cannot be successful without a strong motivation of a professional teaching staff and without a continuous commitment from the top management of a higher education institution.

University policies and strategies are needed to innovate and even transform higher education in the next years to:

- Blended degree education will raise the quality and efficiency of degree education, facing large numbers of students and it will offer new possibilities for communication and cooperation both inside the university (student-student and student-staff) and with stakeholders (student-stakeholder and teacher-stakeholder).
- Blended and online education will upscale the area of continuing education and continuous professional development (CPD) by offering flexible courses with a large outreach responding to the needs of learners at work, who face longer careers and career shifts.
- MOOCs are offered online only, providing massive and open learning opportunities for all, promoting engagement in the knowledge society.

University policies and strategies in this respect can be complementary to each other and to some extent interwoven. These were presented and explored during the 3-day OOFHEC2018 conference touching upon various supporting topics like:

- Accreditation of online education
- Quality Assurance in Blended and Online Education
- Short Learning Programmes
- Open education and MOOCs, European MOOC Consortium
- Inclusiveness
- Internationalisation by virtual mobility
- Networked curricula and Virtual Mobility
- New competences for teachers staff development and teacher training

The conference was well attended by representatives from more than a 100 universities from 30 different countries all over the world and with participation of higher education institutional policymakers, governmental bodies involved in innovating HE, deans and directors, educational innovators, university staff and umbrella organisations in higher education. All with a passion for research, improving teaching, learning, quality and support services by innovating education.

The Online, Open and Flexible Higher Education Conference 2018 - Proceedings will give you an overview of papers presented under the topics mentioned above.

EADTU and our host Aarhus University thank all contributors for making this event so interesting and inspiring. We thank all participants for their active involvement and hope to meet you all next year at the OOFHEC2019, hosted by UNED in Madrid, Spain.

With regards,

George Ubachs  
Managing Director EADTU

## Keynote speakers

We thank our keynote speakers for their inspiring contributions to the OOFHEC2018 Conference.



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# Analysing emotions to personalise learning on EduOpen Moocs' platform

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### Abstract

In this paper we analyse the emotional experience of students in 11 courses within EduOpen ([www.eduopen.org](http://www.eduopen.org)), an international Moocs' platform. The main theoretical idea is that communities of inquiry (Garrison, Anderson, & Archer, 2000) are digital learning experiences characterized by an emotional dimension strongly impacting on learning (Cleveland-Innes, & Campbell., 2012). Our methodological approach refers to the field of qualitative learning analytics (ibidem; Loperfido, Dipace, Scarinci, in press), which connects the attention to the personalization of learning with the understanding of the students' experience from a microlevel point of view. Therefore, we connect the use of the general sentiment analysis, which looks at both negative and positive feelings, with Grounded theory approach, which looks at specific emotions. Through a bottom up process and Nvivo 11 Plus software, we analysed the forum dedicated to the students' self-presentation from all of the 11 courses. We defined a set of categories composed by a three-levels system. At a general level, we have the macrodimensions "Sentiment about EduOpen" and "Emotions toward topics". Each of these dimensions is composed by a number of "child" categories and subcategories. After defining the entire set of categories and categorizing all the texts (which was a circular process), we run some graphs on Nvivo showing the hierarchical structure of dimensions, the relations among dimensions and sources, and the clusters of dimensions by coding similarity. Results show how some courses are more composed by negative or positive sentiments and how the motivations dimension heavily characterizes the emotional dimension of students.

**Keywords:** emotional experience, moocs, learning analytics, grounded theory

### 1. Introduction

This contribution connects three different fields: the area of learning analytics, the area of education specifically interested in digital mediated learning processes, and the approaches focused on the emotional dimension in learning. Namely, learning analytics is the measurement, collection, analysis and reporting of data about students and the contexts they learn through. The aim of learning analytics is to understand, personalize and optimize learning and the environments in which it occurs. Learning analytics are mainly used in learning contexts mediated by the use of digital environments, since they can produce an amount of data about the traces each student or entire groups of learners leave online, successful activities, difficult experiences, and so on (Rienties & Rivers, 2014). In relation to the field of learning analytics, we stress the

<sup>1</sup> Anna Dipace wrote the section "Method of analysis and results"

Fedela Feldia Loperfido wrote the section "Introduction"

Alessia Scarinci wrote the sections "Aim", "Context and data", and Conclusions

emotional dimension of learning as well. Speaking about feelings and emotions from a general and classical perspective, we can think that human beings can feel universal emotions, such as anger, disgust, fear, happiness, sadness, and surprise (Ekman, 1999) or joy-sadness, anger-fear, trust-distrust and surprise-anticipation (Plutchik, 2013). However, we can refer to emotion and, specifically, to emotions and learning, after answering the question “How can we define and understand emotions at a more specific level?”. According to Zembylas (2008), there is no agreement about what an emotion is and is characterized by. Indeed, emotions can be understood at least through three different perspectives: 1) Emotions as private and belonging to an intimate experience, as defined by psychodynamic approaches; 2) Emotions as sociocultural phenomena, as understood by social constructionist approaches; 3) Emotions as described by interactionist approaches, which transcend the dichotomies (e.g. mind/body, individual/social) established in the previous two and aims at bridging their differences. However, even if there is no a common definition of emotions, authors claim that they are not separated from the learning context (Lehman, 2006; Lipman, 1991). Coherently to this, for example, communities of inquiry (Garrison, Anderson, & Archer, 2000) are digital mediated learning experiences characterized by the cognitive presence, the social presence, the teaching presence and the emotional presence (Cleveland-Innes, & Campbell., 2012). This last is understood as the “emotional expression part of being socially present online” (ibidem, p. 272). If we still stay at this general layer, we can connect the interesting about the emotional dimension and the learning analytics by referring to Sentimental analysis, also known as Opinion mining looking for both negative and positive sentiments people have about the digital environment they use. However, this connection does not suggest how we can understand emotions at a more specific level. As for this point, Cleveland-Innes & Campbel (2012) approach the emotional experience of students through Grounded theory, that is by doing a content analysis of texts, looking for contents about emotions and defining a grid of categories through a bottom up process (from the text to the categories).

If we take for granted this premise, we can focus on the method of analysis we will use in this contribution. Very often, learning analytics are based on quantitative and statistic approaches (Greller & Drachsler, 2012; Papamitsiou & Economides, 2014), which are able to handle the huge quantity of data produced by online platforms. The so-called Big data, indeed, can give a paramount contribution in the analysis of individual and students’ groups traces to support the learning personalization. However, when using quantitative analytics, researchers risk to lose the learners’ micro perception about their own experience. We are not saying here that quantitative learning analytics are not useful, of course; rather, we try to stress the importance of considering the qualitative-micro experience of students which can go together with numbers and statistics (Macfadyen & Dawson, 2012). Therefore, in this paper, we connect both learning analytics and grounded theory to analyse the emotional experience of students in an online learning context made by eleven Mooc-based courses. So, we will present the analysis by showing the set of categories emerged from the students posts and how we use Nvivo software to sustain our qualitative view.

## **2. Aim**

- To describe a qualitative method of analysis to explore the emotional processes experienced by students during the participation in MOOCs proposed by EduOpen ([www.eduopen.org](http://www.eduopen.org));

## **3. Context and data**

This research is supported by Unifg Tutoring – UniTutor project and the context of analysis is EduOpen, an international Moodle platform lead by the University of Foggia (IT). At a general level, EduOpen is realized by 17 Italian Universities and several foreign partnerships. It started in 2014 and is an action-research project periodically rearranged thanks to evidence-based methods. Until now, it involved more than 70300 learners from all over the world and proposed 140 courses. Indeed, the activities of EduOpen are online courses loaded on the Moodle based platform [www.eduopen.org](http://www.eduopen.org). Each course, then, refers to a specific topic (e.g. math for beginners, animals, English, and so on), and is managed by a university teacher and an online tutor of the EduOpen team. Furthermore, at the end of a course, students receive a participation certification, an open badge or ECTS. More specifically, each course spends three-five weeks and is composed by:

- A self-presentation forum where students usually write down a post about themselves, the place they live, the wishes and expectations they have about the course, and so on;
- A number of MOOCs videotaped by the teacher and related to the topic of the course;
- Another forum where students can ask further explanations to the teacher;
- An evaluation section, where students fill in online tests during or at the end of the course.

All of the courses are categorized in different fields (such as, Literature, Science, and so on), in several pathways (an ensemble of courses connected each other by a main theme) and/or in the catalogue that a specific University partner proposes. In this paper, data are characterized by the self-presentation forums of all the courses managed by the University of Foggia (IT). These are 11 courses and have involved 43345 students in total (10277 of them completed the course they were unrolled in).

#### 4. Method of analysis and results

Grounded Theory sustains that researchers have to operate inductively. As qualitative data are reviewed, repeated ideas and concepts appear and are tagged with codes (Strauss & Corbin, 1990; ); Sentiment analysis aims at identifying and categorizing opinions expressed in a piece of text, especially to determine whether the writer's attitude towards a particular issue is negative or positive (Liu, 2010; Nasukawa, 2003). By combining these two views with each other, we:

1. Created a first general grid of analysis, composed by the two general dimensions "Positive sentiments" and "Negative sentiments" referred to the learning experience in the digital context;
2. Categorization of the texts through qualitative content analysis (Mayring, 1997), by using Nvivo 11 Plus;
3. Generation of further dimensions and their specific categories, emerging from the interaction between grounded approach and theoretical concepts;
4. Team discussion about the building of the grid and the categorization;
5. Checking of the categorization according the team discussion;
6. Analysis of the nodes (the categories to the software) by using Nvivo 11 Plus.

During the analysis, we realized that the first version of the grid needed to be much more enriched. Therefore, we created a double grid, able to grasp three levels of the students' emotional experience in the University of Foggia EduOpen courses. In other words, we defined two general dimensions: 1) "Sentiment about Eduopen", grasping what students felt about Eduopen, its services and the arrangement of the courses; 2) "Emotions toward topic", observing the feelings about the topic of the specific course students participated in. That is, the first dimension is about the feelings toward the digital environment, the concept of EduOpen, the arrangement of the environment. The second one refers to the feelings about the topic of the specific course. Furthermore, as Figure 1 and Figure 2 show, the category "Sentiment analysis" is composed by two more specific categories: "Negative sentiments" and "Positive sentiments". These, in turn, are composed by other two subcategories for each (moderately/very negative; moderately/very positive). To define these hierarchical relations between categories, we used the categorization proposed by Nvivo for default. The figure shows the hierarchical relation among "parents" categories and "child" ones too, as elaborated through the software.

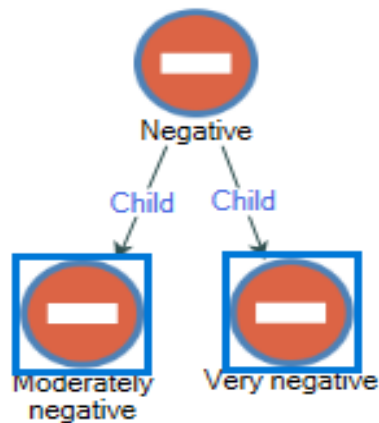


Figure 1. Negative sentiments to EduOpen child graph. Negative sentiments have the two children nodes “Moderately negative” and “Very negative”

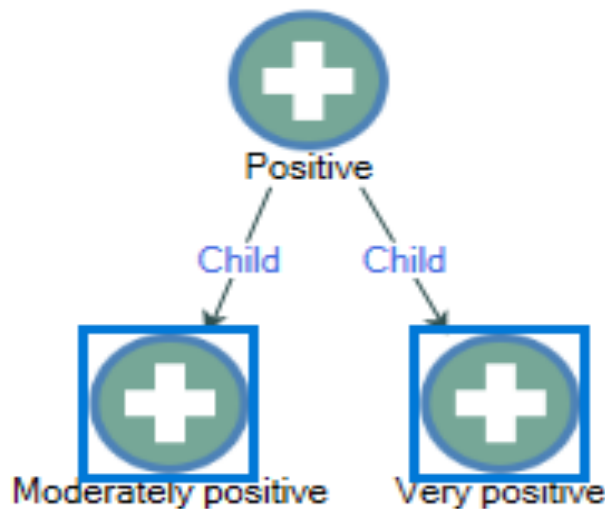


Figure 2. Positive sentiments to EduOpen child graph. Positive sentiments have the two children nodes “Moderately positive” and “Very positive”

Instead, the dimension “Emotions to topic” was at the end shaped by a complex structure of categories. At a middle level, we grasped the three categories “Motivations”, “Negative sentiments” and “Positive sentiments” (not to be confused with the two namesake categories “Positive” and “Negative sentiments” about the digital experience in EduOpen already described). “Motivations” refers to a category exploring a more cognitive dimension, even implying the students’ expectations about the contents of the course and the reason why they are going to attend the course. Indeed, it is composed by seven specific or “child” categories. “Negative sentiments” is about the feelings students have against the content of the course and is composed by five specific or “child” categories. “Positive sentiments” is about the good feelings students have toward the content proposed by the course and is shaped by five specific or “child” categories. In Table 1, we describe all the categories composing “Emotions to topic”.

Table 1. Emotions to the topic

Dimension	Category	Micro category (and eventual description)
Emotions to topic	Motivations	Deepen knowledge (to go in depth in the topic the course refers to)

		Home learning (participate because you can attend the course staying at home)
		Innovative methods (to be tried)
		Mind training
		Old knowledge renewal
		Practical effects (in daily job activities)
		Support to learning (of other contemporary learning experiences)
	Negative sentiments	Disorientation
		Fear
		Feeling in trouble
		Nostalgia (about past learning experiences on the same topic)
		Sense of unfinished
	Positive sentiments	Discovery and curiosity
		Enthusiasm
		Feel interest
		Hope (to better understand the contents in opposition to past experiences)
		Passion

After creating the final grid of analysis by making the categorization, we checked them (the grid and the first categorization) by a team discussion, until we reached a total agreement about both. At the end, we analysed the nodes and their relationships with the sources (the texts of the forum) by elaborating some graphs through Nvivo 11 Plus. The following graphs (Figure 3, 4, 5, 6) and their respective descriptions show the analysis we made. Figure 3 suggests that, in the general dimension “Sentiment to EduOpen”, the category “Positive sentiments” is much more prominent than the which one about negative sentiments. Furthermore, the moderately positive sentiments are more present in the texts than the high positive ones. Figure 4, instead, shows what are the relations between nodes and sources. As it is visible, in eight forums referring to the respecting courses (Biochemical pills, Math for absolute beginners, Law history and philosophy, Animals, Knowing History, History of Italian literature, Course of general mathematics, Tourism marketing through digital media) students express both positive and negative sentiments about the structure of the course and/or EduOpen as a learning experience. Furthermore, in the document of “Pedagogy and education, basic concept” course there are just positive sentiments’ references; whereas, in the course about Physics and Basic general pathology there are no sentiment expressions.

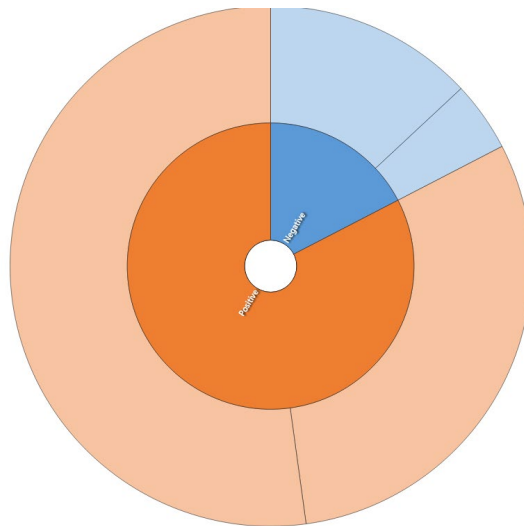


Figure 3. “Sentiment to EduOpen” hierarchical graph. Dark orange section represents Positive sentiments in total, whereas the dark blue one represents Negative sentiments. The smallest light orange section is about the highly positive sentiments; the smallest light blue sections is about the highly negative sentiments.

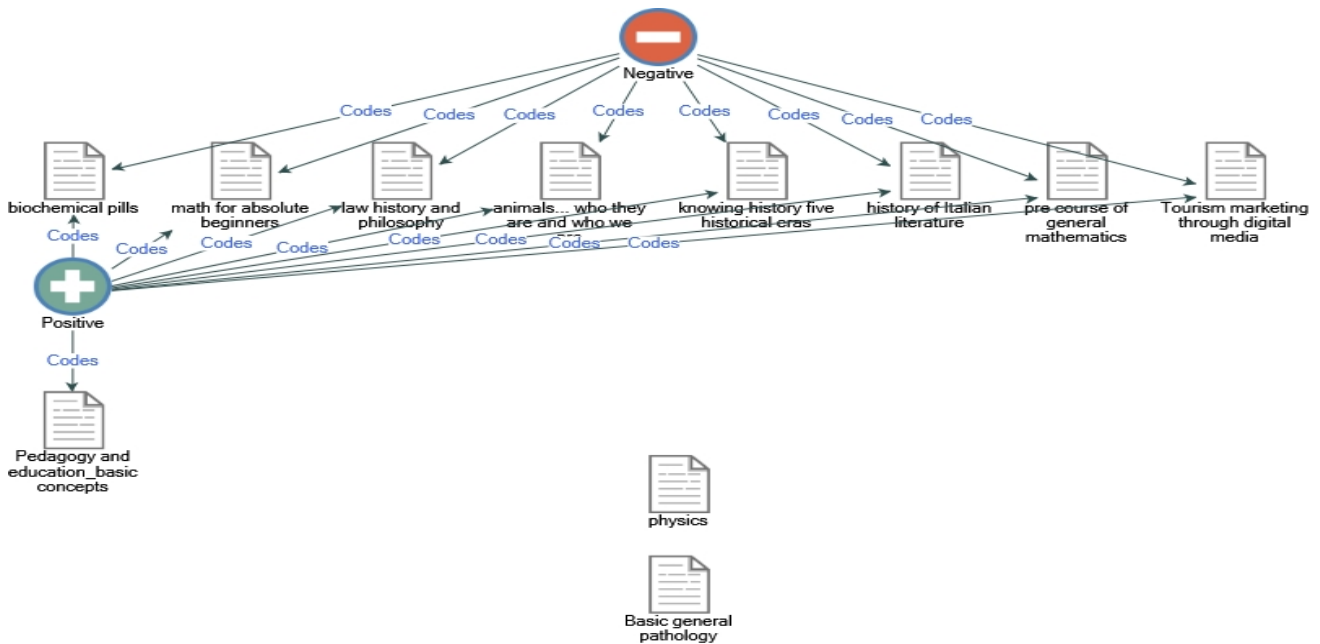


Figure 4. “Sentiment to EduOpen - sources” project map. The red circle represents Negative sentiments; the green circle represents Positive sentiments. Arrows show the relation between each dimension and the forum of the specific course, that is if there are coded units of the text by using the dimensions.

What about the macrodimension “Emotions to topic”? Figure 5 shows that the “Motivation” mesocategory is the richest one, followed by “Positive sentiments” and then by “Negative sentiments”, suggesting that the more cognitive aspects have a higher incidence in the texts.

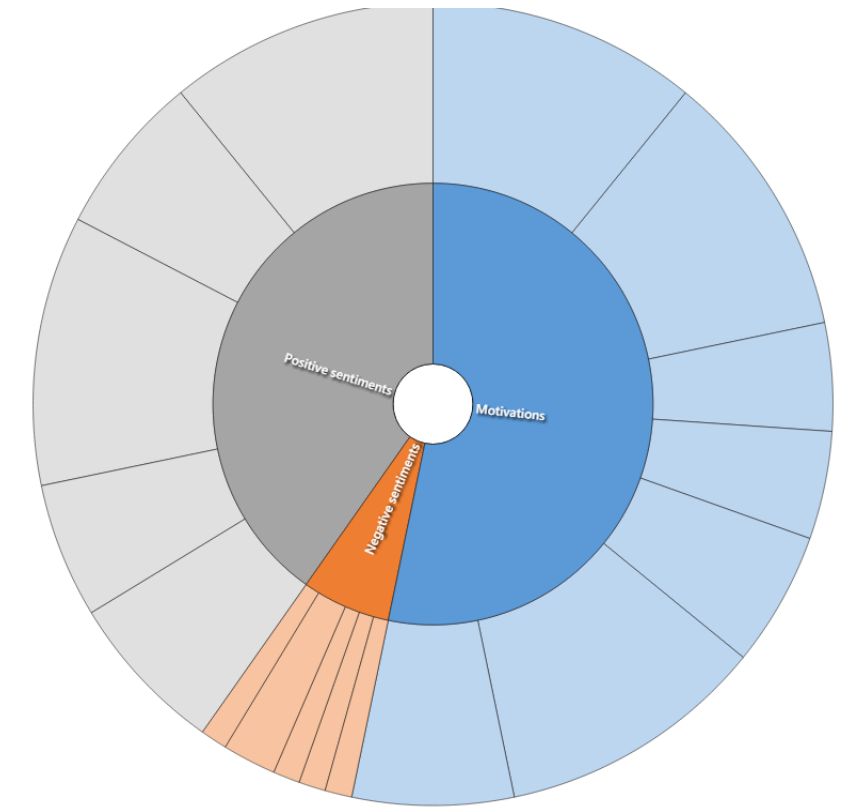


Figure 5. “Emotions to topic” hierarchical graph. The blue section is about Motivations, the grey section is about Positive sentiments and the orange section is about negative sentiments toward the topic.

Figure 6, instead, describes the connections between codes and sources. As it can be seen, the category “Motivation” is related to all of the sources, whereas the category “Positive sentiments” is used on all of the courses’ texts except than in “Physics”. Negative sentiments are involved in just three sources (Math for absolute beginners, Law History, Pedagogy and Education. Basic concepts).

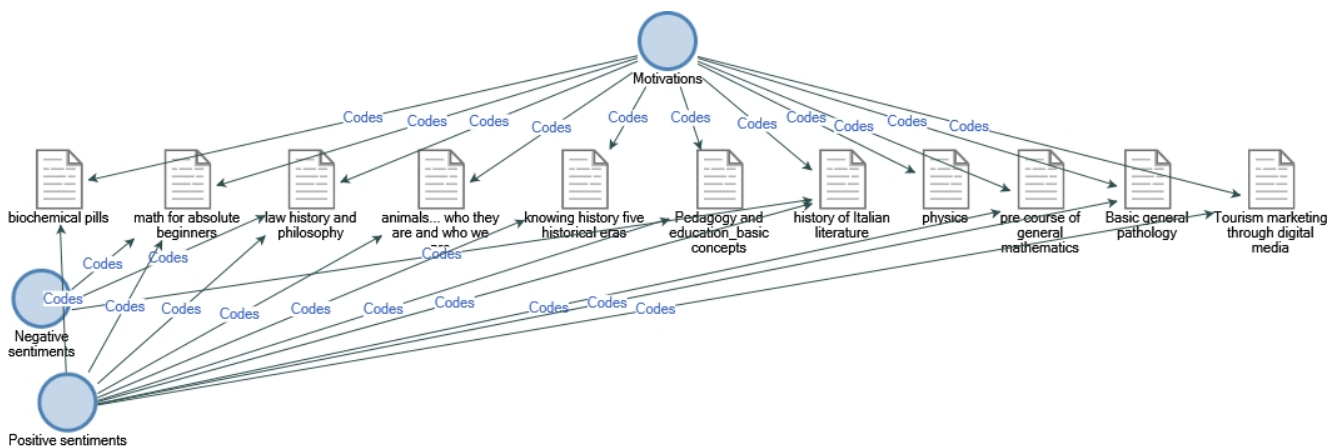


Figure 6. “Emotions to topic - sources” project map

With further analysis, the figures of them are not showed here because of the small space, we clustered both sources and codes by coding similarity. As results, it emerged that “Motivation” and “Positive emotions” are more similar categories, and that “Physycs” and “Basic genetic pathology” are the most distant sources form the others. These further results obtained by the cluster analysis mainly confirm the previous ones.



## 5. Conclusions

In this contribution, we made a sentimental analysis in terms of both negative and positive opinions students have about the learning experience they are going to attend or just began on EduOpen. We also realized a more specific emotional analysis about the feelings learners have for the specific topic of the course they choose. We used a grounded theory approach to grasp the set of dimensions, categories and subcategories about emotions arising from the texts through a bottom up research process. The qualitative method we proposed allowed grasping the complexity of the students' emotional experience, since it recognized the sentiments toward both technology and topics. Furthermore, it allowed a hierarchical view on the students' experience, by building the knots of the discourse and the possible relations among them. However, the most important aspect, to us, is that, through this integrated method, we could grasp the microlevel of the students' perception on their experience. This, in turn, sustained a new planning of the online activities and an increased personalization of them. Do we think that this method is the best one to analyse the mediated learning phenomenon? Absolutely not. Rather, we do claim that a triangulation (Yesamin & Rahman, 2012) of methods can give both a general view on the learning process (through the analysis of Big data) and an analytic perspective on the micro aspects characterizing the learning experience (through Grounded theory integrated with Sentiment analysis).

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