LEARNING ANALYTICS FROM A MOOC ON 'LANGUAGE AWARENESS' PROMOTED BY THE EUROPEAN COMMISSION

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The contribution is aimed at reporting and commenting on some significant Learning Analytics collected from a MOOC on language awareness, addressed to teachers, trainers and educators from all over the world, promoted by the European Commission through the School Education Gateway platform and moderated by the authors. The role of MOOCs for teachers' continuous quality professional development will represent the starting point of the discussion, according to the following research question: "What impact can a MOOC on language awareness have on teachers' professional development?" After a brief overview of the inspirational background and of the MOOC syllabus, data will be highlighted and commented on with reference to the attendees' participation, motivation and online social interaction, according to the following categories identified in the literature: pedagogical issues, learner issues, technical issues. Among the different learning environments and media channels used during the course, Learning Analytics from the Facebook Group, the forum and the Twitter chat will be described and commented on as crucial dimensions of the learning experience.

1 Introduction

In the last few years, there has been a growing interest in the automatic analysis of educational data to enhance the learning experience, a research area referred to recently as learning analytics (Chatti *et al.*, 2012). Learning analytics (LA) is defined on the LAK11 website[1] as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs". Siemens (2010) views LA as "the use of intelligent data, learner-produced data, and analysis models to discover information and social connections, and to predict and advise on learning". The 2011 Horizon Report identified learning analytics as a possible key future trend in learning and teaching (Johnson *et al.*, 2011). According to Johnson *et al.* (2011), LA "refers to the interpretation of a wide range of data produced by and gathered on behalf of students in order to assess academic progress, predict future performance, and spot potential issues. Data are collected from explicit student actions, such as completing assignments and taking exams, and from tacit actions, including online social interactions, extracurricular activities, posts on discussion forums, and other activities that are not directly assessed as part of the student's educational progress. The goal of Learning Analytics is to enable teachers and schools to tailor educational opportunities to each student's level of need and ability. Learning Analytics promises to harness the power of advances in data mining, interpretation, and modelling to improve understandings of teaching and learning, and to tailor education to individual students more effectively". Although different in some details, these definitions share an emphasis on converting educational data into useful actions to foster learning.

In the following paragraphs Learning Analytics on online social interaction in different learning environments within a MOOC addressed to teachers' professional development will be discussed, in order to find answer to the following question: "What impact can a MOOC on language awareness have on teachers' professional development?"

2 MOOCs for teachers' professional development

MOOCs (Massive Open Online Courses) represent an innovative way to enhance continuous professional development for teachers and to build up effective online communities of practice (Wenger, 1999; Downes, 2012). According to Laurillard (2016), MOOCs fit well with the combination of instruction and peer community learning, interweaving formal and informal learning pathways and highlighting the social dimension of the learning

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[1] https://tekri.athabascau.ca/analytics

process. She also states that "there is genuine potential for this technology to engage adults in the emerging economies in a form of professional development that would be commensurate with the immense challenge of capacity building on this scale for the teaching profession across the range of skills they need" (Laurillard, 2016, p. 15).

Teachers are supposed to develop a wide range of skills (subject skills, transversal or soft skills, the so called "21st century skills") and they have to keep up with recent innovations and trends in the knowledge society. MOOCs can help to attain these goals as they can be a cost and resource effective means to deliver quality education in order to further professional teacher development (Evans, 2002). As Marquis (2013) states: "teachers are expected to nearly continuously take classes or attend trainings that will enhance their ability to do their job, yet we never acknowledge the effort or take any solid measures to support it – little to no financial support and no releases time to do the work. But there is a real need for teachers to keep up with the rapid pace of educational innovations and technologies for learning, as well as changes in primary content areas. [...] MOOCs could provide one possible solution to this problem".

Bali (2013) mentions five reasons for teachers to use MOOCs for their professional development, in particular:
- observe how others teach online
- join community conversations about topics of interest
- "e-live" the student experience, a sort of simulation of the students' activities online
- learn something new following certain directions
- find suitable resources on a given theme.

It is self-evident that MOOCs are on the rise and can be utilized for teachers' continuous quality professional development.

The literature reviews (Littlejohn *et al.*, 2016; Koukis & Jimoyiannis, 2017) mention a wide range of issues related to MOOCs, which can be grouped under three categories:
- pedagogical issues: pedagogical design; content and resources; learning material and syllabus
- learner issues: learner motivation; values and expectations; learner dropout rates; learners' participation
- technological issues: learning objectives; instructional design; technologies used; Learning Analytics.

The discussion in the following paragraphs will try to analyse some Learning Analytics from the above-mentioned categories, as an attempt to dig into the

field of learning sciences which can help "understand learning contributing both to theory and practice" (Baker & Siemens, 2014: 253).

3 Pedagogical issues: The inspirational background

The MOOC, which is the subject of this contribution, was promoted by the European Commission, delivered on School Education Gateway Teacher Academy, moderated by the authors and coordinated by Nair Carrera, from EUN (European Schoolnet). The title of the MOOC was "Embracing language diversity in your classroom"[2] and was aimed to enhance teachers' awareness of the language competences of their students and how to benefit from them, as well as to provide them with different tools and resources to support them in delivering curricular subjects in different languages.

The MOOC was addressed to primary and secondary school teachers and teacher trainers from Europe and beyond, working in bilingual and CLIL (Content and Language Integrated Learning) (Coyle *et al.*, 2010; Cinganotto, 2018; Cinganotto & Cuccurullo, 2019) contexts regardless of the subject taught.

The course raised awareness about how having students from diverse nationalities and speaking different languages in the same classroom can actually be used as an asset providing a benefit and added value in a framework of 21st-century skills.

The content was strictly related to the latest Council Recommendation on a comprehensive approach to the teaching and learning of languages (2019), focusing on the importance of "language awareness" as a transversal dimension to the curriculum.

Eric Hawkins, called 'the father of language awareness', had been advocating for explicit reflection on both native and foreign languages as an integral part of the school curriculum since the 1960s. He proposed a 'trivium' of language studies, which consisted of mother tongue study, foreign language study and language awareness work (Hawkins, 1984).

Being language aware means that a teacher can understand the possible challenges that language presents to learning, regardless of the subject taught and can help better students, especially those who are learning a subject through an additional, foreign or second language, considering the multiethnic and multicultural dimension of our schools (Narcy-Combes *et al.*, 2019; Nikula *et al.*, 2016).

Learning more than one language can have a hugely positive impact

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[2] http://academy.schooleducationgateway.eu/web//embracing-language-diversity-in-your-classroom/foro/-/message_boards/message/1191820

on working memory, selective attention, processing information, and mental flexibility. The ability to use more than one language means we can communicate with people from diverse linguistic and cultural backgrounds. We live in an increasingly global world and language skills make travel easier, provide opportunities to study abroad and improve career prospects.

The latest Council Recommendation on Key Competences for Lifelong Learning (2018), reshaped the concepts related to the key competences needed (from reading and writing, horizontal skills to digital competences), using the terms "literacy" and "languages competences", which allow us to talk about communication from a broader perspective, considering L1, L2, L3, LS, Lingua Franca etc. and all the different language varieties which represent an integral part of the individual linguistic repertoire.

4 Learner issues: The participants

Starting from the above-mentioned inspirational background, the MOOC attracted 1135 participants from all over the world, as shown in the map below (Fig. 1).
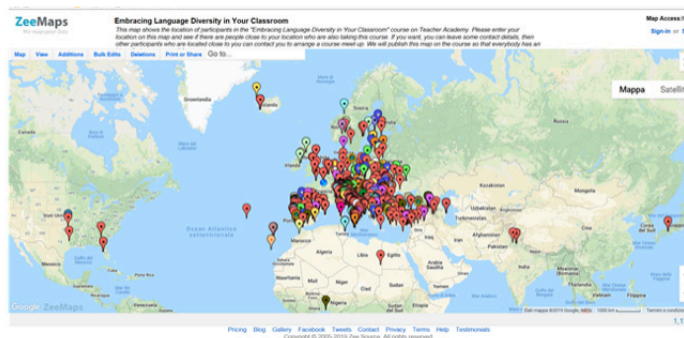

Fig. 1 – The map of the MOOC[3]

The majority of the participants (1135 pins) were from Europe, but there were also participants from the USA, from Africa and from Asia.

1264 participants filled in the initial survey; 88.2% of them were female.

38.36% between 46 and 55 years old and 33.73% between 36 and 45; 12.58% over 55. It is a very interesting statistic, showing the teachers' will to study and innovate their teaching practices even though not so young.

A visual rendering of the participants was realized through a webapp,

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[3] https://www.zeemaps.com/map?group=3153298&location=Europe

"Mosaically", allowing all the participants to upload their picture to be collated and shown in a very dynamic and interactive poster, as shown below (Fig. 2).

Fig. 2 – Course mosaic[4]

As far as the participants' professional profile, the majority of them (64.5%) were secondary school teachers and 27.7% primary school teachers, as shown in the table below (Fig. 3).

This means that the topic of integrating language diversity in the school curriculum may be critical at secondary level: secondary school teachers may feel the need to be equipped with new skills and tools to cope with bilingualism and multilingualism in their classes. At lower levels these issues may be probably easier for a teacher.

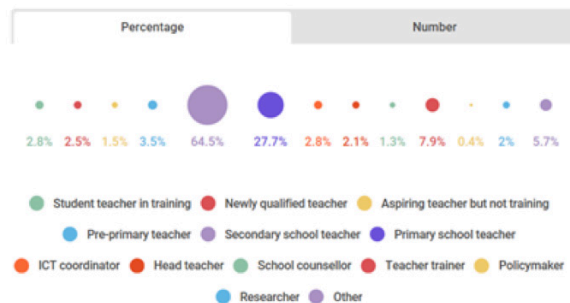7.9% of participants were teacher trainers: unfortunately, this is a very small percentage for such an important role.

Fig. 3 – Professional profile of the participants

35.6% of the participants had more than 20 years of experience in education

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4 https://mosaically.com/photomosaic/b2da5e3f-c45a-4c84-9957-83f747408126#

(Fig. 4) and this confirms the idea that teachers are a very special category of professionals, eager to learn and to innovate, even though not so young, yet experienced.

How long have you been working in education?
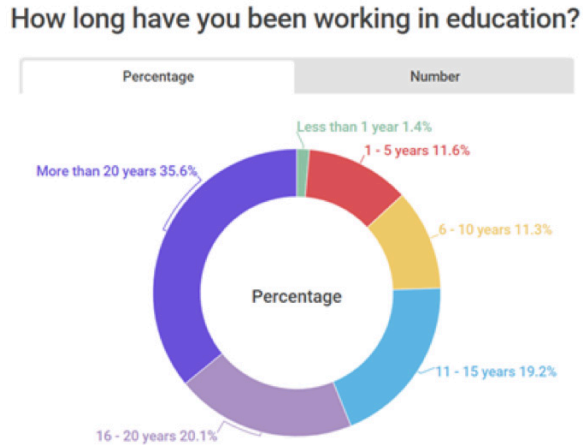
Fig. 4 – The participants' experience in education

The question in the initial survey: "Do you feel well prepared to provide your students with different tools and resources in order to support them to deliver curricular subjects in different languages?" got 42.8% of the answers in position 3 of a Likert scale: this means they feel quite confident with new technologies for language learning (Fig. 5).

"I feel well prepared to provide my students with different tools and resources in order to support them deliver curricular subjects in different languages"

Fig. 5 – The participants' confidence with new technologies

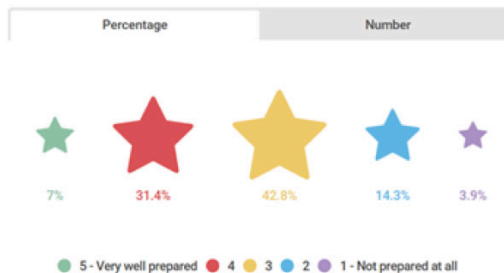81.4% of the participants stated they had enrolled on the course to innovate their classroom practice and 60.9% to find useful resources (Fig. 6). MOOCs are considered useful learning opportunities to innovate and to get content, links and materials to be used in class, as mentioned in paragraph 1. Textbooks may not be so helpful in this field; therefore, this kind of professional development may be a precious opportunity for teachers to improve their teaching style and techniques.
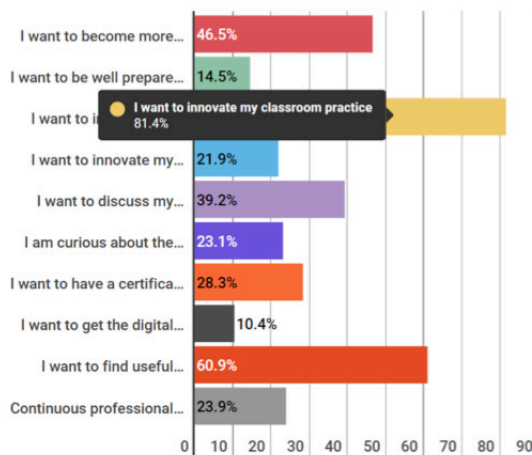
Fig. 6 – The participants' motivation to join the course

5 Technical issues: learning environments

The main learning environment used for delivering the MOOC was the School Education Gateway platform where all the resources and the "Learning Scenarios" produced by the participants were delivered and where a specific Forum was moderated throughout the course.

The media channels used for communicating and interacting during the course were the Facebook Group and the Twitter hashtag *#languagesmooc*.

Some Learning Analytics collected from those environments will be highlighted and commented on, with the aim to find answer to the following research question: "What impact can a MOOC on language awareness have on teachers' professional development?"

6 Methods

In order to analyze data collected from different social and learning environments used for the MOOC, the Learning Analytics Process proposed by Chatti *et al.* (2012) was adopted. It is an iterative cycle generally carried out in three major steps: (1) data collection and pre-processing, (2) analytics and action, and (3) post-processing.
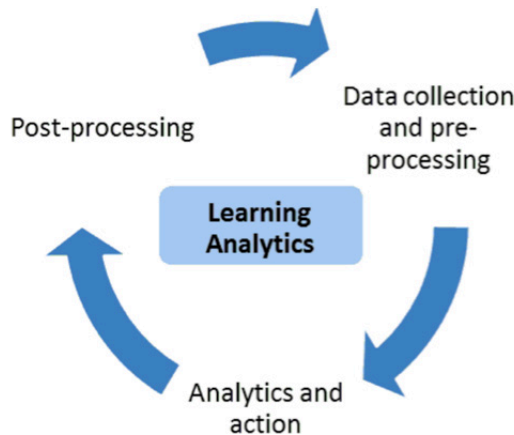

Fig 10 - Learning The Analytics process

As Chatti highlights, "the first step in any LA effort is to collect data from various educational environments. This step is critical to the successful discovery of useful patterns from the data". The collected data may be too large and/or involve many irrelevant attributes, which call for data pre-processing. Data pre-processing also allows transforming the data into a suitable format that can be used as input for a particular LA method. Several data pre-processing tasks, borrowed from the data mining field, can be used in this step. These include data cleaning, data integration, data transformation, data reduction, data modeling, user and session identification, and path completion (Han and Kamber, 2006, Liu, 2006; Romero, Ventura, 2007).

The data we collected from the different learning and social environments refer to the participants' number of logins, showing their interest in the different content of the pathway; data also refer to their interaction and contribution in the forum, in the Facebook Group and in Twitter. We also use a qualitative approach, collecting some data using NVivo software, which is commonly used for qualitative analysis.

The next step of the process, post-processing, crucial for the continuous

improvement of the analytics exercise, can involve compiling new data from additional data sources, refining the data set, determining new attributes required for the new iteration, identifying new indicators/metrics, modifying the variables of analysis, or choosing a new analytics method. This is our field on research at the moment and we are still working at this stage.

What makes learning analytics a 21st century model is that dynamic data mining helps both learners and educators improve their behaviors and techniques in real-time.

7 Results and discussion

7.1 The participation in the modules

2581 registered for the course and 1421 participants actually started and attended it.

In order to get the module badge and the final certificate, the participants had to download the material from each module and complete their own "Learning Scenario", conceived as an individual outcome of the course, in the shape of a lesson plan on the topic of the MOOC and their own "Learning Diary", thought of as the digital portfolio of each participant, collecting memories, pictures, resources, considered relevant for their own personal and professional growth.

Here is the overview of the syllabus, developed over 4 modules:
- Module 1: The importance of language awareness
- Module 2: Turning language diversity into an asset for your teaching
- Module 3: Content and Language Integrated Learning
- Module 4: Multilingual classroom projects.

The MOOC started on 24th September 2018 and it is still open from the Open Educational Resources perspective in order to make the material available for further consultation.

The brainstorming module, aimed at getting familiar with the platform and the learning environment but with no badge, was not attended as expected. This gives an idea of how important badges and formal recognition are for teachers' professional development: "gamification" can be effectively adopted in MOOCs to enhance attendees' motivation and increase completion rates (Khalil et al., 2018). Another reason for this low rate of attendance may be the fact that, as emerged from the initial survey, the majority of the teachers were quite confident with technologies and may have felt ready to start the learning activities directly, skipping the brainstorming module.

In terms of log-ins to the course, the first module was the most popular one, probably due to the participants' enthusiasm starting a new initiative.

Here is the number of participants starting and finishing each module (Table 1).

Table 1
NUMBER OF PARTICIPANTS STARTING AND FINISHING EACH MODULE

	How many started	How many finished
Module 1: The importance of language awareness	1385	1127
Module 2: Turning language diversity into an asset for your teaching	864	769
Module 3: Content and language integrated learning	770	682
Module 4: Multilingual classroom projects	712	458

The first module was started by 1385 participants and completed by 1127, while the other modules were probably considered less attractive and interesting. Dropping out throughout a MOOC can be a natural phenomenon, especially considering such a high number of participants.

In this case the first module on the importance of language awareness was the core of the course, strictly linked to the main message of the Council Recommendation on languages. So, we may say that placing this module as the first one was probably a good choice.

The highest number of log-ins to the course was registered at the beginning, during the first module (Fig. 7), confirming the great initial interest in the topic of the course.
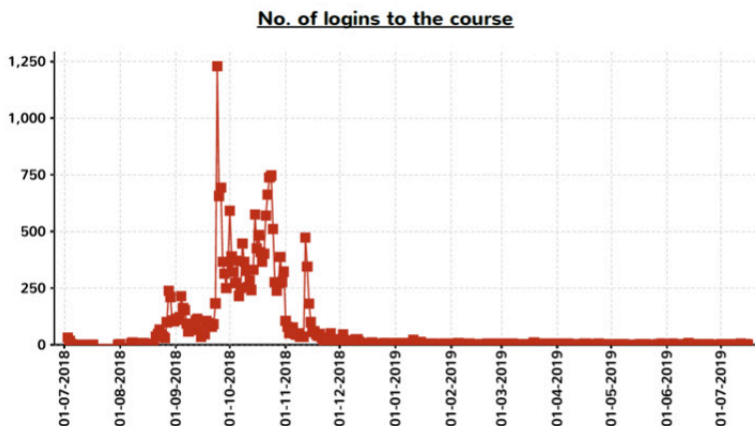

Fig. 7 – Number of log-ins to the course

These are the starting dates for each module, in detail:
- the first module started on 24 September 2018
- the second module started on 1st October
- the third module started on 8 October
- the fourth module started on 15 October.

All the moderated activities ended on 31st October 2018, although the materials and resources were left available for consultation and still are.

It is worth highlighting that there was some activity in the course till July 2019. This means some teachers were particularly interested and wanted to go back to the platform later, probably during their activities in class, in order to get ideas, materials, resources. This is a very positive outcome, showing the efficacy of the learning pathway provided by the MOOC.

On 26 September a live synchronous meeting with Sarah Breslin, Director of the ECML (*European Centre for Modern Languages*) of the Council of Europe took place and this was a very important event for the course, also because it coincided with the European Day of Languages and the European Commission thought it was a good idea to celebrate it in this way. That is why there was a very high number of log-ins to the platform that day.

The details of the log-ins to each module show once again the boom which occurred in the first module, reaching 2500 log-ins. The colours in the graph below, associated with each module (Fig. 8) also show that Module 1 (in red) keeps attracting the participants' attention, being visited, even if at a very low percentage, until now. The Module 3 on CLIL (in purple) received about 1000 log-ins, some more than Module 2 (in yellow); last position is taken by Module 4 (in light blue), with less than 1000 log-ins. It is interesting to note that we can see some bits of yellow (Module 2 on language diversity) and light blue (Module 4 on multilingual projects) in diachronic perspective up to now, while there is no trace of purple (Module 3 on CLIL) after the end of the course.

It is actually an interesting but surprising outcome at the same time, the fact that CLIL may not have been so popular nor attractive for the participants. It may be interpreted in different ways: some teachers may already be familiar with this methodology, especially at upper secondary school level and may already be implementing it in their classes, therefore they may be eager to learn something new, as the ideas proposed in the other modules, especially in Module 1 on language awareness, which has been perceived as somehow innovative, even if it actually relaunched and revisited themes well known in the literature. Another hypothesis may be linked to the natural process of dropping out, as CLIL is presented as the third content of the course, so towards the final part of it.
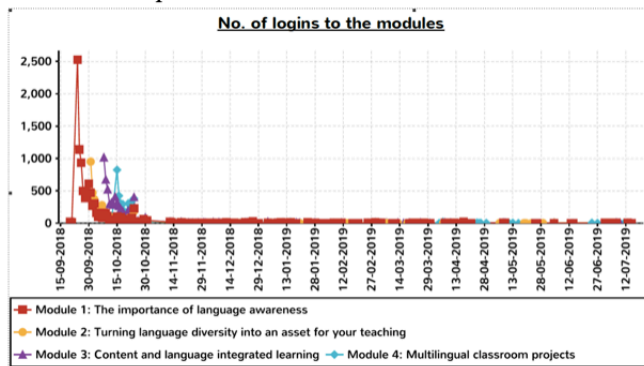
Fig. 8 – Number of log-ins to the modules

7.2 The key words of the training

Using Nvivo software, an attempt to gather the most common words used by the participants during the course, in relation to the content of the course was made.

As far as Facebook is concerned, all the posts added to the Facebook Group, counting 917 members since the beginning of the course, were collected and a specific query about word frequency was launched. This was the result (Table 2).

Table 2
FACEBOOK GROUP WORD FREQUENCY QUERY

Word	Length	Count
2018	4	600
tag	3	590
learning	8	309
course	6	175
scenario	8	162
visualizza	10	154
review	6	151
thank	5	147
thanks	6	140
link	4	128
language	8	105
please	6	104
work	4	98

Word	Length	Count
com	3	86
designer	8	79

The first position is the year of the training course, 2018, followed by the word "tag", occurring 590 times: participants usually tagged other participants or the files they uploaded. "Learning" and "course" are quite popular, as naturally linked to the initiative. It is worth underlining the frequency of the words "scenario" and "review", two important tasks of the course: the design of a "Learning Scenario", mentioned earlier, assigned as a tangible output of the course and the "Peer Review", the review of an activity uploaded by a colleague, according to certain criteria, from a peer learning perspective. The participants had many lively discussions on Facebook: they were proud of their "Learning Scenarios" and were eager to share them with their colleagues, collecting their feedback in a very constructive way.

"Thanks" and "thank" are often used by the participants who were grateful to administrator and moderators for all the work done.

The same analysis using Nvivo was made collecting the forum posts, selecting all the threads related to each module[5].

The outcome of the word frequency query mostly generated the word which was mainly associated with the topic of the module, as the four tag clouds below show:

Fig. 9 – Word frequency tag cloud for each module

In module 1 one of the most frequent words (apart from "language", "module" and "https", related to the different links suggested in the forum) is ECML, mentioned during the module, with particular reference to the webinar run by Sarah Breslin, the Director of the institute.

One of the most popular words in the Module 2 forum is "webinar": in fact, on 5th October another webinar, run by Nell Foster, from University of Ghent,

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[5] The tables for each module word frequency query are included in the Appendix.

Belgium took place and it was very successful: the participants discussed it a great deal later on in the forum. Two webinars were probably not enough for a four-module MOOC, as they were much appreciated by the participants: an important lesson learnt for future similar initiatives.

In module 3 "CLIL" and "methodology" are the protagonists of the cloud, being the main topic of the module. It is quite significant how the word "student" is central and popular only in the Module 4 forum and in the Module 2 forum, even if with lower numbers: students should be the real protagonists of all the learning and teaching process.

In module 4 forum we also find the word "project", strictly linked to the content of the module, but also to the interesting discussions coming from the participants willing to keep in touch even after the course, by cooperating at eTwinning or Erasmus projects with their own schools: a very useful follow up of the MOOC, which can be considered one of the main results and benefits for the participants.

7.3 The discussion forum

In order to analyze the contributions posted in the discussion forum, we filled in a 'weekly notable contribution grid' (Fig. 11), generally adopted in EUN MOOCs.

URL/location or just copy text here	What? (E.g. Learning Diary, interesting link, tweet, lesson resource, controversial or interesting comment, etc.)	Name of participant	Date (ideally of when contribution was made)	Your name
Week …				

Fig. 11 - Weekly Notable contributions grid

The purpose of the table was to collect participant contributions that we could highlight in weekly course emails and give as examples in discussions to enhance participation and foster learning.

Analyzing a forum is a rather complex process. It is within the forum that a process of continuous creation and evolution takes place, it is there that communicative exchanges are fostered and encouraged, it is there that knowledge is built in a collaborative manner, through the mutual support among participants who share strategies, models, paths.

This is how the forum becomes a learning space, a scenario where the moderator is the manager and facilitator of the discussions. The correct

management of the communication process involves the ability to be able to read the requests of the participants, be able to respond adequately and be able to manage the communicative dynamics, maintaining an interpersonal relationship that is complex for its being mediated. Given the almost total absence of meta-communicative elements, communicating online means mainly using a text-based method: linguistic (lexicon, style) and non-verbal (punctuation, abbreviations, capital letters, emoticons) modes come into play. To analyze the complexity of the interactions, various approaches (Cacciamani, 2003) can be adopted; however, the most widespread models for the analysis of the interactions in asynchronous discussion groups supported on a forum, take into consideration both quantitative and structural parameters. In most cases, the starting point is the quantitative data as an indicator of a qualitative phenomenon.

The analysis is generally carried out:

at a first level on:
- the number of discussions
- the number of replies to the opening messages of the discussions
- the number of visits per discussion

at a second level on:
- the total number of messages entered (used to evaluate the level of participation in general)
- the number of messages sent by students in relation to the number of messages sent by tutors (to assess the level of active participation of students)
- the number of messages produced per student (to verify the presence of more or less active students in the virtual classroom)
- the number of messages produced in a given period of time (to understand the level of student participation)
- the length of messages (to understand the qualitative progress of the discussion)

from these data we can learn about:
- the depth of a discussion (number of messages in reply)
- the depth of the forum (given by the average of the depths of the discussions)
- the forum density (given by the ratio between the total number of messages entered as a reply and the total number of discussions)
- the lurking index (given by the relationship between visits and replies).

As illustrated in Fig. 12, 11 categories of threads were created by the moderators with a total number of 558 messages by 176 participants. The category dedicated to the 'learning activities' had the highest number of threads and posts, being the core of the course, followed by the category opened for the sharing and the feedback on the 'learning diaries', a cross curricular task for the participants, excluding the category of technical issues, irrelevant from a learning point of view.

Due to the nature of the content course, in Module 2 and Module 3 we added only two categories, which explains the significant lower number of threads and posts, compared to Module 1 and Module 4; the analysis of this trend was the focus of the second step in the learning analytic process: 'analytics and action'. Basing on the pre-processed data and following the objective of the analytics exercise, we moved to explore the results in order to discover hidden patterns that could help to provide a more effective learning experience.

Category	Subcategories	Threads	Posts	
European Day of Languages	0	8	27	◄ Actions
Introduction	0	8	49	◄ Actions
Learning Activities: Peer Reviews (Lost and Found) If you delivered an empty text box in the first step of your activity, or if you forgot to attach the file, please share your work in this category. It won't be recorded in the Learning Activity space, but at least your reviewer (or the colleague whose work you reviewed) will be able to find your file on the forum.	0	65	86	◄ Actions
Learning Diaries You can use this forum category to post your Learning Diaries and ask other participants for feedback.	0	44	80	◄ Actions
Module 1: Building bridges between formal and informal learning	0	12	52	◄ Actions
Module 2: Empowering students through personalized learning	0	2	9	◄ Actions
Module 3: Content and language integrated learning	0	2	9	◄ Actions
Module 4: Strategies to empower students through collaborative learning	0	21	56	◄ Actions
Notable contributions Please find here our notable contributions every week. If you spot other great contributions from a fellow participant, please don't hesitate to share!	0	4	4	◄ Actions
Recommendations Please post any recommendations of how we can improve the course here.	0	2	2	◄ Actions
Technical Issues & Questions Please first check the FAQ section to see if there is an answer to your question or issue. If you cannot find an answer, please post your question or comment here.	0	37	107	◄ Actions

Fig. 12 - Total number of categories, threads and posts

The quantification of the interactions serves to highlight the trend of the threads, allowing the reader to identify critical and weak points. The progress of the discussion can be represented taking into consideration two factors that Simoff (2000) calls 'weight of the link' and 'weight of the term'; the first

involves a direct link between the messages, the second can also link messages that are apparently distant from each other and define a very articulated and complex structure. In any case, the analysis models of the threads cannot be separated from an analysis of the contents of the single messages, to understand if they refer to the didactic path, to other interests or if they represent independent contributions with a social emotional background. Here comes the qualitative analysis, which focuses attention on individual messages, and is relevant for understanding and analyzing the progress of discussions and communication and monitoring learning.

Messages are usually divided into sub-categories:
- messages that refer to personal or emotional experiences
- messages referring to information material or information request
- messages that try to pose new problems to open questions
- discussion summary messages
- messages that propose new topics for discussion

Of course, analyzing messages from a typological and content point of view is very difficult, given the fragmentary nature of network communication and the frequency of cross-references, citations, and commingling in electronic messaging. Fafchamps (1998) distinguishes between:

islands, messages that do not refer to others that preceded them and that in turn do not produce replicas
dialogues, or small sets of two or more messages closely related to the same topic
cobwebs, sets of different messages linked and crossed with one another.

A typical example of 'islands' messages was the 'welcome thread' in Module 1, were participants only introduced themselves without interacting, while 'dialogues' were created in the 'learning diaries' discussion where they had been invited to comment on others' productions. Examples of 'cobwebs' messages can be found at the end of the course in the category for finding partners in E-twinning projects (Fig. 13), both for the content of the discussion and the time it had been started, at the end of the course, when the learning community had been set through the online social communication channels.

Fig. 13 – Example of cobwebs

7.4 The twitter chat

Before the ending of the course, there was a successful experience of running a Twitter chat. As illustrated in Fig. 14, even if it was the first experience of this kind of communicative exchange for most of the participants, there was a huge number of impressions (the times users saw the twits) and engagements (clicks, retweets, replies, follows and likes divided by the total number of impressions). 'Formal and informal learning' and 'Language awareness' were the most twitted questions, which meant for us, as moderators, the evidence that the course had reached its aims.
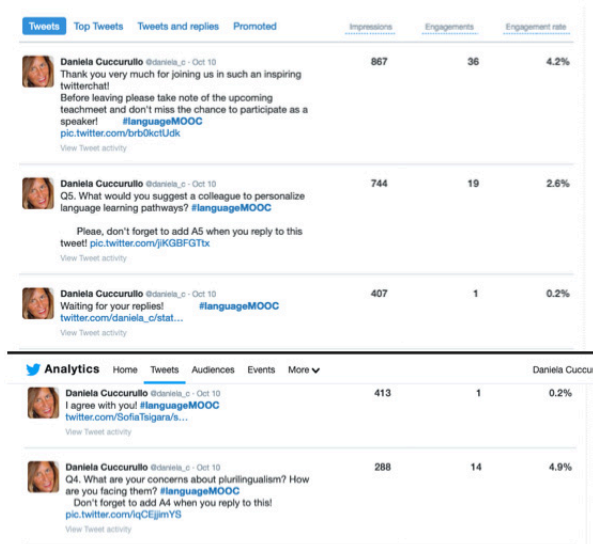

Fig. 14 - Analytics of the Twitter chat

Conclusion

The paper aimed at reporting and commenting on Learning Analytics collected from an international MOOC on language awareness and language diversity at school promoted by the European Commission.

Some main learner issues, pedagogical issues and technical issues considered relevant by the authors were highlighted as lessons learnt for future training initiatives. In fact, data linked to the attendees' professional profile, motivation, participation and online social interaction can help understand better the efficacy of a training pathway in order possibly to modify it in the future and to increase the attendees' opportunity for success.

Teachers like this kind of opportunity for professional development, especially as they interweave formal, informal learning and social exchange, key dimensions for an educator.

Our research question: "what impact can a MOOC on language awareness have on teachers' professional development?" got a wide range of interesting inputs: participants find the MOOC as an alternative and engaging way to inspire and enrich their professional activities. They have the opportunity to select the content and the part of the pathway they find more relevant; they are happy to accomplish certain tasks assigned, as the "Peer review" and the "Learning Scenario"; they can reflect and share their ideas with the other participants in the forum and in the Facebook Group. They also like interacting online in synchronous, considering their active participation in the live webinars with the experts and in the Twitter chat organized by the moderators. These live dimensions of the training are perceived as fundamental for the teachers' professional development and should be probably implemented further in future training initiatives.

Discussing Learning Analytics collected from the different environments of the MOOC helped us get deeper "awareness of the impact of social dimensions of learning and the impact of learning environment design on subsequent learning success" (Baker & Siemens, 2014: 265).

Appendix

MODULE 1 FORUM WORD FREQUENCY QUERY

Word	Length	Count
https	5	22
module	6	22
ecml	4	21
language	8	21
course	6	14
www	3	14
com	3	11
aspx	4	10
awareness	9	10

default	7	10
find	4	10
learning	8	10
please	6	10
tabid	5	10
introduction	12	8

MODULE 2 FORUM WORD FREQUENCY QUERY

Word	Length	Count
webinar	7	4
see	3	3
students	8	3
classroom	9	2
create	6	2
every	5	2
families	8	2
Italian	7	2
multilingualism	15	2
speak	5	2
strategies	10	2
thanks	6	2
2module	7	1
activate	8	1
another	7	1

MODULE 3 FORUM WORD FREQUENCY QUERY

Word	Length	Count
clil	4	11
methodology	11	7
Italian	7	4
language	8	4
module	6	4
teachers	8	4
another	7	3
course	6	3
idea	4	3
think	5	3

find	4	2
good	4	2
ideas	5	2
interesting	11	2
just	4	2

MODULE 4 FORUM WORD FREQUENCY QUERY

Word	Length	Count
students	8	17
project	7	16
like	4	9
school	6	8
English	7	6
learning	8	6
teachers	8	6
aged	4	5
chemistry	9	5
heritage	8	5
share	5	5
something	9	5
teachmeet	9	5
activity	8	4
also	4	4

Acknowledgments

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