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Facebook and the others. Potentials and obstacles of Social Media for teaching in higher education

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ABSTRACT

Social Media tools are seen by many authors as powerful drivers of change for teaching and learning practices, in terms of openness, interactivity and sociability. However, extensive surveys about actual use that are carried out with large samples at a national level are rare. This study reports the results of a survey addressed to the Italian academic staff, with the aim of identifying the uses of Social Media in the field of university teaching practices. The response rate was 10.5%, corresponding to 6139. The respondents were asked to identify frequency of use, motivations, teaching practices and obstacles related to the use of a number of tools: generic social network sites (Twitter, Facebook), professional and academic networking services (LinkedIn, ResearchGate and Academia.edu), tools to write and comment (blogs, wikis) and to archive and retrieve content material for lectures and group work (podcasts, YouTube and Vimeo, SlideShare). Analyses of data tested which socio-demographic variables mostly affected frequency of use, and the relationships between motivations, ways of use, barriers to use and the scientific discipline. The results show that Social Media use is still rather limited and restricted and that academics are not much inclined to integrate these devices into their practices for several reasons, such as cultural resistance, pedagogical issues or institutional constraints. However, there are differences among academics in the ways they use Social Media or perceive them, mostly depending on the scientific discipline of teaching. Overall, the results emphasise ambivalent attitudes towards the benefits and challenges of Social Media in the context of higher education with obstacles prevailing over advantages.

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1. Introduction

In educational research literature, the term Social Media has been object of several and contested definitions. Some authors use Social Media interchangeably with the term Web 2.0 ([Mason & Rennie, 2008](#); [O'Reilly, 2007](#)), others with social software ([Ellison & Boyd, 2013](#); [Ravenscroft, 2009](#)), or with social web ([Brown, 2012](#)). Other scholars have provided tentative definitions, such as that according to which Social Media are “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content” ([Kaplan & Haenlein, 2010](#), p. 61). However, as pointed out by [Tess \(2013\)](#), the task of defining these devices is made more

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challenging by the fact that they are constantly in a state of change. Today, social networking sites, blogs, wikis, multimedia platforms, virtual game worlds, and virtual social worlds are among the applications typically included in the Social Media landscape (Tess, 2013).

Despite the contested terminological differences, Social Media refer to a wide range of applications enabling users to create, share, comment and discuss digital contents. They are also depicted as 'dynamic', 'interactive', 'democratic', 'people centric', 'volatile', 'social' and 'adaptive' (Brown, 2012). Due to these features, Social Media are often seen as means through which to deeply transform teaching and learning practices as more social, open and collaboration oriented. In particular, social networking tools are viewed as able to support a distributed and networked process of knowledge building through the connection and the promotion of networks and social interaction (Dron & Anderson, 2014; Siemens & Weller, 2011).

Considering the academic context, some authors (e.g. Brown & Adler, 2008) have underlined that the adoption of these devices generates or requires a radical change of the pedagogical paradigm with 'revolutionary' consequences for academic institutions, or, at least, to reconsider teachers' e-learning and teaching practices. Others (e.g. Junco, 2014) have pointed out how an increased use of Social Media in higher education would lead to reconnecting academic institutions to the new generations of students. However, much of the literature in the field focuses on the potentials of Social Media for learning (Greenhow & Askari, 2015; Manca & Ranieri, 2013, 2015; Tess, 2013) or provides empirical evidence relating to their use in higher education by students (Bennett, Bishop, Dalgarno, Waycott, & Kennedy, 2012; Cooke, 2015; Karvounidis, Chimos, Bersimis, & Douligeris, 2014). Extensive survey studies carried out with the aim of investigating the intended and actual digital practices of academics concerned with Social Media are much less common and related to few countries, such as the USA (Moran, Seaman, & Tinti-Kane, 2011, 2012, Seaman & Tinti-Kane, 2013). Despite these research limitations, higher education scholars are increasingly adopting Social Media in their personal and professional lives (Moran et al., 2012) with Facebook being the most visited Social Media site for personal use and LinkedIn the most used for professional purposes. However, frequency of personal use seems to be mostly associated with the frequency of professional use rather than with the frequency of teaching use (Manca & Ranieri, 2016). These results show a generally more favourable attitude towards personal sharing and professional development through online social networks rather than integrating these devices into teaching practices.

From this point of view, more specific attention to how academic staff actually use Social Media in their teaching practices, and a greater understanding of the perceptions they have of these devices, would allow us to overcome the generic analyses that often characterize reflections on the role of digital technologies for teaching in higher education, and to enhance knowledge about use of these tools in various geographical regions.

This paper aims to contribute to research on the digital practices of academics, focusing on the uses of Social Media and the perceptions that a large sample of Italian academics has about the potential and the barriers of these tools for teaching. Firstly, the paper introduces the related literature and the methodological framework of the research, and then it describes and discusses the results with suggestions for further research.

2. Literature review

2.1. Potentials and challenges of Social Media for teaching and learning

Several studies have reported positive affordances of Social Media for teaching and learning (Gao, Luo, & Zhang, 2012; Manca & Ranieri, 2013, 2015; Rodríguez-Hoyos, Haya Salmón & Fernández-Díaz, 2015; Tess, 2013). Most of these studies are reviews that synthesize findings on the use of Social Media tools, largely in higher education. With reference to microblogging services, Gao et al. (2012), for instance, pointed out how microblogging has a potential to encourage participation, engagement, reflective thinking, collaborative learning, and to expand learning content in different formal and informal learning settings. However, the authors also stressed several challenges, such as unfamiliarity with the tools, information overload, distraction, and prevailing lurking behaviours. Similar potentials were also highlighted by Manca and Ranieri (2013) in their review study of Facebook as a technology-enhanced learning environment. The authors highlighted a number of Facebook's pedagogical affordances, such as the possibility of mixing different information and learning resources, to hybridise different expertise, and to widen the context of learning. However, the authors also stressed that several obstacles may prevent a full adoption of Facebook as a learning environment, such as declared and implicit institutional policies, teachers' and students' pedagogies, and several cultural issues. In another study, Manca and Ranieri (2015) reported a number of challenges and opportunities offered by social network sites that would deserve further research investigation: issues related to communication between students and teachers and their appropriate professional behaviours; pedagogical and technological challenges related to incorporating social networking practices into teaching and academic practices; and exploitation of social networking for teachers' professional training and development. The authors also identified a number of implications for policy and practices, such as questioning students' and teachers' vision of school or of academia and their didactic agreements. In their review study on the use of social network tools, Rodríguez-Hoyos et al. (2015) discussed the need to widen lines of research to include dimensions such as geographical and gender differences that could affect attitudes, resistance and actual uses of these sites.

However, despite these suggestions, many teachers and faculty staff remain uncertain when they are requested to integrate Social Media tools or to assess their impact on students' learning (Crook, 2012; Greenhow & Askari, 2015). With reference to the K-12 related education sector, Greenhow and Askari (2015) especially emphasised the potential of social networking sites to increase interaction and networking between teachers, students and parents, as well as to co-create

content in and out of the classroom, in the light of the advocated constructivist approaches. However, the authors also stressed that the majority of studies published in the last decade mostly failed in establishing the technology's effectiveness at improving student learning. These conclusions were also pointed out by [Crook \(2012\)](#), who cautioned against the possible tensions that may arise when incorporating participatory practices associated with Social Media into formal contexts of learning. These tensions are especially related to issues like the reshaping the traditional roles of teacher and student, the closed boundaries of school classes or lecture halls as opposed to the openness of Social Media, individual and collaborative learning and their implications for assessment and learning styles.

Besides the claims made by these authors, the results reached so far suggest that there is the need to carry out further studies that focus on actual and intended use of Social Media, especially by large cohorts of teachers and faculty staff. In the following, a review of studies that investigated attitudes and perceptions that mostly affect the adoption of Social Media in teaching is presented.

2.2. Faculty attitudes towards Social Media for teaching

While many studies are focused on students' usage and perceptions of Social Media use in learning ([Bennett et al., 2012](#); [Cooke, 2015](#); [Karvounidis et al., 2014](#)), very few explored teaching practices or teachers' perceptions of Social Media benefits and constraints. Indeed, when exploring teaching practices based on the use of learning platforms that exploited Social Media affordances, issues such as teachers' prior experiences with ICT in education, their attitudes towards digital media and their expectations, their pedagogical beliefs and current practices must be taken into consideration ([Ajjan & Hartshorne, 2008](#); [Brown, 2012](#); [Ravenscroft, 2009](#); [Rogers-Estable, 2014](#); [Veletsianos & Kimmons, 2013](#); [Veletsianos, Kimmons, & French, 2013](#)).

In a study on teachers' awareness of pedagogical affordances, [Ajjan and Hartshorne \(2008\)](#) reported that most of the respondents showed positive attitudes towards integrating Social Media in their teaching. However, very few declared using these tools or planning to do so. Scarcely perceived usefulness and low compatibility with current practices emerged as the most recurring reasons for low adoption. Similarly, [Rogers-Estable \(2014\)](#) reported that declared uses of Social Media by teachers in higher education did not match the reported benefits, and concluded that extrinsic factors (e.g. time, training, and support), rather than intrinsic factors (e.g. beliefs, motivation, confidence), were the main barriers to faculty to use more these tools in education. Also [Brown \(2012\)](#) explored academics' perceptions of the potential of Social Media for their teaching and any influences shaping those perceptions. The results of her study showed cautious attitudes towards these technologies, ranging from discerning use of these tools in some contexts for promoting student-centred learning to the belief that ongoing experimentation with and discussion is the best way of reaching a deeper understanding of their potential. [Veletsianos and Kimmons \(2013\)](#), investigating how faculty lived experiences with social networking sites, pointed out that tensions exist between online social networks and faculty identity, as well as between personal connections and professional responsibility. Their research showed that while social networking sites can be positively used for professional purposes, the values embedded in such tools are the object of resistance or rejection when transferred to their teaching and research. At the same time, [Veletsianos et al. \(2013\)](#) highlighted how social network sites and Social Media are usually framed by the ways other tools, such as Learning Management Systems, are understood and experienced. According to this study, familiarity with existing tools and use of technology for specific functions (i.e. compartmentalization) may explain the ways that social network sites were experienced, thus contrasting starkly with the narrative of how Social Media might contribute benefits to educational practice. In the same vein, [Ravenscroft \(2009\)](#) stressed that academic staff prefer those pedagogical and instructional practices that better circumscribe the 'anarchical' potential of Social Media tools and, therefore, favour closed platforms such as Learning Management Systems that are more teacher-centred and rely less on students' contribution and their online social networking.

In the following the specific factors that mostly seem to influence Social Media adoption in higher education are presented.

2.3. Factors that influence Social Media adoption for teaching

There are several factors that could influence Social Media adoption for teaching ([Buchanan, Sainter, & Saunders, 2013](#); [Cao, Ajjan, & Hong, 2013](#); [Dahlstrom, 2012](#); [Greenhow & Gleason, 2014](#); [Moran et al., 2012](#); [Scott, 2013](#); [Ulrich & Karvonen, 2011](#)). [Buchanan et al. \(2013\)](#) investigated how a factor such as self-efficacy was associated with faculty use of learning technology and whether clearly identifiable barriers were associated with technology uptake among academic faculty. The results of the study showed that low perceived usefulness and negative conditions were associated with lower reported use. The findings also suggest that faculty use of learning technologies should be understood taking into account both individual and contextual factors. Also [Cao et al. \(2013\)](#) investigated the main factors affecting the educational outcome of Social Media use in college teaching. They found that factors such as perceived usefulness, external pressure and compatibility of task-technology have positive effects on Social Media use. Moreover, the higher the perceived risk of using Social Media, the less likely faculty uses the technology to support in-class instructions frequently. Another study ([Ulrich & Karvonen, 2011](#)) tested a number of predictors of the integration of Social Media tools into formal online learning environments, by investigating attitudes toward learner self-direction, instructional technology, and innovation; external facilitators and constraints; Web 2.0 knowledge and interest; and intended and actual use of Web 2.0. The results show that interest in these applications was partially predicted by prior knowledge of the technologies and perceived usefulness did not seem to be correlated to instructor interest, while interest predicted intended use.

With reference to socio-demographic variables, [Scott \(2013\)](#) reported that factors such as gender, age and previous experiences influenced teachers' adoption of e-learning and new technologies like social network sites. The study also showed how crucial the role of the institutional support staff was when the teachers started to use e-learning platforms and social networking tools, particularly in promoting their reflections on their unfulfilled expectations, nurturing dialogue and collaboration between peers and support staff, and involving teachers in the redesign of digital resources. Similarly, [Moran et al. \(2012\)](#) found that age plays an important role in the decision to adopt Social Media for teaching; according to their results, younger faculty use Social Media in their teaching more than older faculty do. Also according to [Greenhow and Gleason \(2014\)](#), younger scholars are using Social Media more than their older colleagues.

A further factor to be considered is the scientific discipline. As shown by [Dahlstrom \(2012\)](#), faculty adoption of Social Media may vary depending on the subject matter whereby scholars in the humanities and arts, professions and applied sciences, and the social sciences are using Social Media more than those in natural sciences or mathematics and computer science. Similarly [Moran et al. \(2012\)](#) found that scholars in the humanities and arts had higher rates of use when compared to scholars in the natural sciences.

3. Rationale of the study and research questions

Given the scarcity of extensive surveys in diverse geographical areas beyond North America, this study aims at providing empirical evidence on whether and how Social Media are used in higher education for teaching purposes by a large sample of academic staff in the Italian context. Another aim is to investigate in what circumstances Social Media are used in teaching, by taking into account a number of socio-demographic variables, such as age, gender, academic discipline, number of years of teaching, and academic title. The study also intends to explore the motivations that may lead academics to adopt these tools for teaching, the ways the tools are used in teaching, and the eventual obstacles that might prevent their use. Considering these objectives, the investigation aims to provide answers to the following research questions:

1. What are the socio-demographic variables that are most related to frequency of teaching use of Social Media tools?
2. What are the main motivations to use Social Media tools in teaching?
3. In what ways were Social Media tools used as part of a course?
4. What are the obstacles that prevent academic staff from using them in their teaching practice?

4. Method

4.1. The survey tool

This study comprised an online survey of academic faculty employed in the Italian higher education system. A survey tool was prepared to collect data, measure a number of variables, and answer the research hypotheses. We chose to translate and adapt a survey tool that has been administered by Pearson and the Babson Survey Research Group in the USA for a number of years ([Moran et al., 2011, 2012, 2013](#); [Moran et al., 2012](#); [Seaman & Tinti-Kane, 2013](#); [Tinti-Kane, Seaman, & Levy, 2010](#)). The aim of these surveys is to provide a framework of various Social Media uses related to the personal, teaching and professional areas of interest in higher education. For the purposes of our investigation, it was identified among existing tools as the most appropriate to respond to our research questions. However, since Pearson and the Babson Survey Research Group administer different versions of the questionnaire each year, the 2012 edition ([Moran et al., 2012](#)) was selected as the last available version at the time of this investigation. The original questionnaire design was based on one used for a previous study ([Moran et al., 2011](#)), drawing on survey research developed for previous Babson Survey Research Group faculty studies.

The process of translation and adaption went through a number of stages. First, some adjustments (e.g. tenure status, primary discipline) and integrations (e.g. private or public university, academic title and geographical region) were made to accommodate differences between the two countries.

Second, the range of tools originally selected in the US survey (Twitter, Facebook, LinkedIn, Google Plus, Podcast, Blog and Wikis) was integrated with tools to retrieve multimedia content like YouTube and Vimeo, and a slide-hosting service such as SlideShare. The reason was to widen the range of tools that faculty staff can use in their teaching as sources through which to retrieve content material in their courses. Moreover, since one of the aims was to measure professional use of Social Media, social network services for research and academia like ResearchGate and [Academia.edu](#) were included. The overall cohort of tools does not deal exhaustively with the Social Media landscape. As pointed out, although they are constantly in a state of change, tools such as social networking sites, blogs, wikis, multimedia platforms, virtual game worlds, and virtual social worlds, are among the applications typically included in Social Media ([Tess, 2013](#)). Moreover, the aim was to focus on the most popular sites and well-known names recurring in specific Social Media brand names (i.e. Twitter, Facebook, LinkedIn, YouTube, Vimeo, ResearchGate, [Academia.edu](#), SlideShare) or to generic Social Media terms (Blog, Wiki, Podcast) when they are mainly known to a generic public. Other tools that falls under the category of Social Media, such as Flickr or social bookmarking tools like Diigo, were not included because less popular and usually not used for teaching purposes. Possible further

tools like document management and repository tools like Dropbox and Google Drive, or video-conferencing tools like Skype, do not fall within the applications typically included in Social Media (Tess, 2013).

Third, a few questions about the use of tools that do not fall properly within the category of Social Media (e.g. “In what ways (if any) do you and your students use videos in courses that you are teaching?”, “What sources (if any) of video have you used in courses that you are teaching?”, “How much of a deterrent are the following to your use of Open Educational Resources (freely available educational materials) in your courses?”, “How important are the following for your selection of online resources for your courses?”) were discarded. Further questions aimed to measure specific interest toward tools and their perceived usefulness for the three uses were included (e.g. “What specific social media sites (if any) do you find most valuable for teaching” [the complete list of tools is provided]).

Fourth, a set of questions aimed at investigating motivations for using Social Media for personal, teaching and professional purposes were added. These items were constructed based on the review of the literature which indicate common motivations to integrate Social Media for personal use (e.g. “To keep in touch with family and friends”, “To meet new people”, “To spend time leisurely”), professional life (e.g. “To share my professional interest”, “To give visibility to my professional results”), or teaching practice (e.g. “To increase students’ motivation and involvement”, “To fulfil ways of collaborative and participative learning”). Respondents were asked to provide a single answer for each tool.

Fifth, the sixteen items that were constructed to understand instructors’ obstacles to using Social Media in teaching practices were partially drawn from the Pearson survey (eight items) and partially constructed based on the review of the literature (eight items: “Scarcity of diffusion among students”, “Lack of purposeful features for teaching”, “Increase of workload”, “Weakening of students and teachers’ traditional roles”, “Effects on students’ distraction”, “Loss of warmth of human contacts”, “Scarcity of good practices for some tools (e.g. social network sites)”, “Scattering of participants and information in multiple environments”).

Sixth, the predefined items to measure ways to use Social Media tools as part of a course were derived from the Pearson survey.

The final questionnaire was a tool composed mostly of closed questions and a number of open fields through which respondents could, at their own choice, motivate their responses (e.g. for questions like “Do you think that Social Media are useful for teaching”, “What specific social media sites (if any) do you find most valuable for teaching?”, or “How much of a deterrent are the following to your use of Social Media in your courses? [along with a list of 16 items]”). The complete survey tool is available at Manca (2014).

Two referees (one researcher at the authors’ institution and one associate professor in a US university) validated the questionnaire in terms of items’ adequacy to measure the intended research questions and their understandability. The feedback received from the referees brought us to adjust the scale. Subsequently we tested the questionnaire on 20 people from the university population. Based on the results of this pilot study, we refined the survey instrument (questionnaire) and clarified any difficult-to-understand items.

4.2. Recruitment of the participants and procedure

The participants were recruited through the Ministry of Education website that provides names, affiliations, and scientific sector of the Italian university population. Data, that were updated at the 1st September 2013, resulted in 58,175 subjects. Email addresses, not available in the Ministry of Education files, were obtained through address books in the university websites or by building them starting from the domain name (e.g. name.surname@domainname.it).

The survey was implemented through LimeSurvey (<http://www.limesurvey.org/>), an open source platform, and invitations to compile were sent via email by the software. In this way, only people who were listed in the Ministry of Education files had access to the online tool.

The survey was open from October–December 2013. After one month, a reminder was sent to help increase response rate. No incentive was offered for participation. Participants were, however, told that they would be informed of the results if they expressed an interest in that.

Out of 58,175 subjects contacted, 6139 compiled the survey, corresponding to a response rate of 10.5%. Surveys that were not completed with reference to at least the section related to the frequencies of use were excluded.

Data related to the use of Google Plus were omitted since we quite easily inferred that our respondents answered the question as if it were being asked about Google’s search engine or other Google products such as Gmail and Google Apps. For the same reason, a similar decision was taken in the Pearson survey (Moran et al., 2012).

4.3. Data analysis

We primarily used descriptive statistics to summarize the characteristics of the sample and inferential statistics to elaborate data to provide answers to the research questions. In both cases, the IBM Statistical Package for Social Sciences (SPSS 18.0) was used.

Open comments to closed questions, when provided, were analysed with the aim of finding additional elements to complement quantitative data. To analyse these comments we adopted a Grounded Theory approach (Glaser & Strauss, 1967; Strauss & Corbin, 1998) within an iterative process of qualitative content analysis.

4.4. Sample characteristics

A first quantitative analysis regarded the comparison between the sample and the target population. The aim was to test whether the main characteristics of the sample and the population overlapped and whether the sample could be considered adequately representative of the population. A number of Chi-square tests were carried out. However, as Chi-square tests are known to be affected by sample size, when results were significant (i.e. $p < 0.05$), their effect size r was considered. If the Chi-square test was significant but the effect size was small or negligible ($r < |0.30|$), we considered it as evidence of sufficient overlap between the sample and the target population (Chiorri, 2014).

Results show that the sample overlap the population on a number of socio-demographic variables. These variables are: gender (male, female; $X^2(1) = 29.238$, $p < 0.01$, $r = .07$), academic title (Assistant Professor, Associate Professor, Full Professor; $X^2(2) = 103.921$, $p < 0.01$, $r = 0.13$), scientific discipline (Mathematics and Computer Science, Natural Sciences, Professions and Applied Sciences, Humanities and Arts, Social Sciences; $X^2(4) = 134.370$, $p < 0.01$, $r = 0.15$), and geographical region (Northern, Central, Southern Italy; $X^2(2) = 62.494$, $p < 0.01$, $r = 0.10$). In Table 1, data related to these variables are reported, along with age and number of years of teaching.

5. Results

5.1. Use and perceived usefulness of Social Media tools

Data related to the frequency of teaching use were self-evaluated on a scale constituted by the following measures: “Daily”, “Weekly”, “Monthly”, “Rarely”, “Do not use”. Out of 6139 respondents, 3931 (64.0%) declared using at least one tool. However, this number decreased to 2521 (41.1%) if daily, weekly and monthly (all together) use was considered. The most used tools are YouTube-Vimeo ($N = 2410$; 39.3%), Blog-Wiki ($N = 1761$; 28.7%), and ResearchGate-Academia.edu ($N = 1572$; 25.6%). Detailed numbers are reported in Table 2.

The survey also explored the issue of perceived usefulness of Social Media. Respondents were asked to provide an answer to the question “Do you think that social media tools are valuable for teaching?” (Yes/No/I do not know). Out of 5833 respondents, only 2249 (38.6%) declared they are useful for teaching purposes, while 2179 (37.4%) reported a negative answer, and 1405 (24.0%) declared to be undecided. If the “Yes” answer was selected, respondents were also asked to respond to the following question “What specific social media sites (if any) do you find most valuable for teaching?” by selecting the proper tools from a complete list. The majority assessed YouTube-Vimeo ($N = 1156$; 19.8%), Blog-Wiki ($N = 817$; 14.0%), and Facebook ($N = 748$; 12.8%) as being more useful. For a complete report of results, see Table 3.

Table 1
Socio-demographics and professional characteristics tested through Chi—square tests.

		Sample (N = 6139)	Population (N = 58,175)
Gender	Males	3727 (60.7%)	37,245 (64.0%)
	Females	2412 (39.3%)	20,930 (36.0%)
Academic title (N = 6043)	Assistant Professor	3130 (51.8%)	26,824 (46.6%)
	Associate Professor	1704 (28.2%)	16,086 (28.0%)
	Full Professor	1209 (20.0%)	14,612 (25.4%)
Scientific discipline	Mathematics and Computer Science	435 (7.1%)	3174 (5.5%)
	Natural Sciences	1216 (19.8%)	2257 (19.5%)
	Professions and Applied Sciences	1957 (31.9%)	2931 (37.9%)
	Humanities and Arts	1280 (20.9%)	1056 (17.2%)
	Social Sciences	1251 (20.4%)	4980 (19.9%)
Geographical region	Northern Italy	2768 (45.1%)	24,744 (42.5%)
	Central Italy	1734 (28.2%)	15,205 (26.1%)
	Southern Italy	1637 (26.7%)	18,226 (31.3%)
Age	Less than 25	0 (.0%)	—
	25–34	253 (4.1%)	—
	35–44	1939 (31.6%)	—
	45–55	2185 (35.6%)	—
	55+	722 (11.8%)	—
Years of teaching experience	Less than 5	722 (11.8%)	—
	5–10	1047 (17.1%)	—
	10–20	2512 (40.9%)	—
	20+	1858 (30.3%)	—

Table 2
Frequency of teaching use (N = 6139).

	Daily	Weekly	Monthly	Rarely	TOT (daily-Rarely)	Do not use	TOT (use-not use)
Twitter	31 (.5%)	63 (1.0%)	64 (1.0%)	180 (2.9%)	338 (5.5%)	5801 (94.5%)	6139 (100.0%)
Facebook	165 (2.7%)	292 (4.8%)	218 (3.6%)	427 (7.0%)	1102 (18.0%)	5037 (82.0%)	6139 (100.0%)
LinkedIn	32 (.5%)	95 (1.5%)	115 (1.9%)	343 (5.6%)	585 (9.5%)	5554 (90.5%)	6139 (100.0%)
Podcast	31 (.5%)	73 (1.2%)	116 (1.9%)	320 (5.2%)	540 (8.8%)	5599 (91.2%)	6139 (100.0%)
Blog-Wiki	185 (3.0%)	502 (8.2%)	471 (7.7%)	603 (9.8%)	1761 (28.7%)	4378 (71.3%)	6139 (100.0%)
YouTube-Vimeo	115 (1.9%)	480 (7.8%)	701 (11.4%)	1114 (18.1%)	2410 (39.3%)	3729 (60.7%)	6139 (100.0%)
ResearchGate-Academia.edu	152 (2.5%)	369 (6.0%)	390 (6.4%)	661 (10.8%)	1572 (25.6%)	4567 (74.4%)	6139 (100.0%)
SlideShare	61 (1.0%)	185 (3.0%)	245 (4.0%)	461 (7.5%)	952 (15.5%)	5187 (84.5%)	6139 (100.0%)
At least one tool	387 (6.3%)	984 (16.0%)	1150 (18.7%)	1410 (23.0%)	3931 (64.0%)	2208 (36.0%)	6139 (100.0%)

5.2. The association of socio-demographics and professional characteristics with frequencies of teaching use

General linear models were used to test the association of socio-demographics and professional variables with the frequencies of teaching use. Gender, age, number of years of teaching, academic title, and scientific discipline were entered in the model as factors (main effects only), and frequencies of teaching use were the criteria.

The results revealed that gender predicted the frequency of use of Twitter, with a prevailing male use ($F(1,6029) = 10.06$, $p < 0.01$, $\eta^2 = 0.002$), with a weak effect size. Females prevailed over males in use of Podcasts ($F(1,6029) = 10.00$, $p < 0.01$, $\eta^2 = 0.002$), YouTube-Vimeo ($F(1,6029) = 29.29$, $p < 0.001$, $\eta^2 = 0.005$), [ResearchGate-Academia.edu](#) ($F(1,6029) = 19.39$, $p < 0.001$, $\eta^2 = 0.003$), and SlideShare ($F(1,6029) = 29.96$, $p < 0.001$, $\eta^2 = 0.005$), though a weak effect size was found. No difference was found with reference to Facebook, LinkedIn or Blog-Wiki.

Results related to *age* revealed that ranges 25–34, 35–44 and 45–54 tended to use Twitter more than range 55+ ($F(3,6029) = 5.21$, $p < 0.001$, $\eta^2 = 0.003$) with a weak effect size. Lower age ranges tended to use Facebook progressively more than older ($F(3,6029) = 6.32$, $p < 0.001$, $\eta^2 = 0.003$), with a weak effect size. No difference was found with reference to LinkedIn, Podcast, Blog-Wiki, YouTube-Vimeo, [ResearchGate-Academia.edu](#) or SlideShare.

Number of years of teaching differently predicted results of the tests. In the case of Twitter, use tended to be higher in people with higher numbers of years of teaching ($F(3,6029) = 4.21$, $p < 0.01$, $\eta^2 = 0.002$), though a weak effect size was found. Differences related to the use of Facebook emerged only with reference to range 10–20, which prevailed over less than 5 ($F(3,6029) = 3.69$, $p < 0.05$, $\eta^2 = 0.002$) with a weak effect size. No difference was found with reference to LinkedIn, Podcast, Blog-Wiki, YouTube-Vimeo, [ResearchGate-Academia.edu](#) or SlideShare.

With reference to *academic title*, identified as Assistant Professor (AP), Associate Professor (ASP) and Full Professor (FP), use of LinkedIn pointed out a more frequent use by FP than by AS and ASP ($F(2,6029) = 5.22$, $p < 0.01$, $\eta^2 = 0.002$), though a weak effect size was found. Use of Podcasts revealed a more frequent use by AP than by ASP and FP ($F(2,6029) = 4.30$, $p < 0.05$, $\eta^2 = 0.001$) with a weak effect size. As far as Blog-Wiki was concerned, use was higher in AP than in ASP or FP ($F(2,6029) = 6.82$, $p < 0.01$, $\eta^2 = 0.002$). Also use of YouTube-Vimeo revealed a more frequent use by AP than by ASP and FP ($F(2,6029) = 5.79$, $p < 0.01$, $\eta^2 = 0.002$) with a weak effect size. No difference was found with reference to Twitter, Facebook, [ResearchGate-Academia.edu](#) or SlideShare.

Lastly, with reference to *scientific discipline*, these were identified as Mathematics and Computer Science plus Natural Sciences (MCSN), Professions and Applied Sciences (PAS), and Humanities and Arts plus Social Sciences (HASS). With the perspective of disciplinary areas, a number of significant differences emerged. As for Twitter, HASS exhibited a more frequent use than MCSN and PAS ($F(2,6029) = 16.60$, $p < 0.01$, $\eta^2 = 0.005$), while it was higher in PAS than in MCSN, with a weak effect size. Also in relation to Facebook, use was higher in HASS than in MCSN and PAS ($F(2,6029) = 23.99$, $p < 0.01$, $\eta^2 = 0.008$), and it was higher in PAS than in MCSN, with weak effect sizes. As to LinkedIn use, it was preferably chosen by PAS with respect to MCSN and HASS, and by MCSN with respect to HASS ($F(2,6029) = 13.56$, $p < 0.001$, $\eta^2 = .$), with a weak effect size. Podcast use was more frequent in HASS than in MCSN and PAS ($F(2,6029) = 28.72$, $p < 0.001$, $\eta^2 = 0.009$), with a weak effect size. Blog-Wiki use was more frequent in MCSN and HASS than in PAS ($F(2,6029) = 13.40$, $p < 0.001$, $\eta^2 = 0.004$), with a weak effect size. YouTube-Vimeo use was higher in HASS than in MCSN and PAS ($F(2,6029) = 39.79$, $p < 0.001$, $\eta^2 = 0.013$), with PAS reporting a more frequent use than MCSN, with a small size effect. Use of [ResearchGate-Academia.edu](#) was found to be more frequent in PAS than in MCSN ($F(2,6029) = 5.49$, $p < 0.01$, $\eta^2 = 0.002$), with a weak effect size. Finally, in use of SlideShare, PAS and HASS prevailed over MCSN ($F(2,6029) = 14.84$, $p < 0.001$, $\eta^2 = 0.005$), with a weak effect size.

5.3. Motivations to use Social Media tools in teaching practice

Motivations to use Social Media tools for teaching purposes were investigated through a series of items, among which respondents were asked to choose the most appropriate: “To increase students’ motivation and involvement”, “To fulfil ways of collaborative and participative learning”, “To capitalize on students’ familiarity with these tools”, “To improve the quality of teaching”, “To experiment with new tools”, “To share content material with students easily”, “Other motivation”. Only respondents who had reported to use these tools for teaching reasons were requested to provide the main motivation for use.

Table 3
Perceived usefulness of Social Media.

	N (%)
Twitter	248 (4.3%)
Facebook	748 (12.8%)
LinkedIn	239 (4.1%)
Podcast	271 (4.6%)
Blog-Wiki	817 (14.0%)
YouTube-Vimeo	1156 (19.8%)
ResearchGate-Academia.edu	685 (11.7%)
SlideShare	510 (8.7%)
TOT of positive answers	2249 (38.6%)
TOT of negative answers	2179 (37.4%)
TOT of undecided answers	1405 (24.0%)
TOT of answers	5833 (100.0%)

Facebook and Twitter were mainly used to increase students' motivation and involvement (25.3% and 25.5%, respectively), but also for exploiting students' familiarity with Facebook (22.5%). Podcasts are used mainly to improve the quality of teaching (27.7%) and to share content material with students easily (24.9%). The reasons behind the adoption of Blogs and Wikis rely mainly on improving the quality of teaching (24.9%), sharing easily content material with students (23.1%), and fulfilling ways of collaborative and participative learning (22.3%). YouTube and Vimeo are mainly used to improve the quality of teaching (28.5%), ResearchGate and [Academia.edu](#) to share content material with students easily (28.3%) and to improve the quality of teaching (27.6%). Lastly, reasons to use SlideShare mostly rely on sharing content material with students easily (39.4%) and to improve the quality of teaching (31.9%). Detailed results are reported in [Table 4](#).

Moreover, a number of Chi-square tests were performed to examine the association between motivation and scientific discipline. We decided to test this association because scientific discipline seemed the most discriminating among variables tested for frequency of use.

The association between the variables was significant for Facebook ($X^2(12, N = 911) = 24.13, p < 0.05, Cramér's V = 0.115$), Podcast ($X^2(12, N = 358) = 25.84, p < 0.05, Cramér's V = 0.190$), Blog-Wiki ($X^2(12, N = 1049) = 39.11, p < 0.001, Cramér's V = 0.137$), YouTube-Vimeo ($X^2(12, N = 1577) = 46.87, p < 0.001, Cramér's V = 0.137$), and [ResearchGate-Academia.edu](#) ($X^2(12, N = 826) = 46.48, p < 0.001, Cramér's V = 0.168$). No significant association was found for Twitter ($X^2(12, N = 332) = 17.13, p = 0.145, Cramér's V = 0.016$), LinkedIn ($X^2(12, N = 329) = 9.33, p = 0.674, Cramér's V = 0.119$) or SlideShare ($X^2(12, N = 599) = 4.81, p = 0.964, Cramér's V = 0.063$).

Inspection of adjusted standardized residuals showed that for Facebook "Other motivation" was represented more in the MCSN group. For Podcast use, the category "To experiment with new tools" was more represented in the HASS group. For Blog-Wiki use, the categories "To fulfil ways of collaborative and participative learning" was more represented in the MCSN group, while category "To experiment with new tools" was represented more in HASS group"; finally, "To improve the quality of teaching" was represented both in the MCSN and the HASS groups. For YouTube-Vimeo use, categories "To fulfil ways of collaborative and participative learning" and "To share content material with students easily" were more represented in the MCSN group, while the category "To experiment with new tools" was more represented in the HASS group; finally, "To improve the quality of teaching" was represented both in the MCSN and the HASS groups. Lastly, for [ResearchGate-Academia.edu](#), categories "To improve the quality of teaching" and "To share content material with students easily" were more represented in the PAS and HASS groups. See [Table 5](#) for a summary.

Table 4
Motivations to use Social Media for teaching.

	Twitter (N = 332)	Facebook (N = 911)	LinkedIn (N = 329)	Podcast (N = 358)	Blog-Wiki (N = 1049)	YouTube-Vimeo (N = 1577)	ResearchGate- Academia.edu (N = 826)	SlideShare (N = 599)
To increase students' motivation and involvement	84 (25.3%)	232 (25.5%)	60 (18.2%)	56 (15.6%)	130 (12.4%)	395 (25.0%)	78 (9.4%)	42 (7.0%)
To fulfil ways of collaborative and participative learning	53 (16.0%)	183 (20.1%)	64 (19.5%)	34 (9.5%)	234 (22.3%)	146 (9.3%)	116 (14.0%)	44 (7.3%)
To capitalize on students' familiarity with these tools	47 (14.2%)	205 (22.5%)	35 (10.6%)	20 (5.6%)	71 (6.8%)	99 (6.3%)	32 (3.9%)	15 (2.5%)
To improve the quality of teaching	23 (6.9%)	31 (3.4%)	44 (13.4%)	99 (27.7%)	261 (24.9%)	449 (28.5%)	228 (27.6%)	191 (31.9%)
To experiment with new tools	38 (11.4%)	30 (3.3%)	45 (13.7%)	42 (11.7%)	71 (6.8%)	145 (9.2%)	79 (9.6%)	44 (7.3%)
To share content material with students easily	57 (17.2%)	202 (22.1%)	40 (12.2%)	89 (24.9%)	242 (23.1%)	293 (18.6%)	234 (28.3%)	236 (39.4%)
Other motivation	30 (9.0%)	28 (3.1%)	41 (12.5%)	18 (5.0%)	40 (3.8%)	50 (3.2%)	59 (7.1%)	27 (4.5%)

Table 5
Association between motivations to use the tools for teaching and scientific discipline.

	Twitter (N = 332)	Facebook (N = 911)	LinkedIn (N = 329)	Podcast (N = 358)	Blog-Wiki (N = 1049)	YouTube-Vimeo (N = 1577)	ResearchGate- Academia.edu (N = 826)	SlideShare (N = 599)
Mathematics and Computer Science plus Natural Sciences (MCSN)	None	Other motivation	None	None	To fulfil ways of collaborative and participative learning To improve the quality of teaching	To fulfil ways of collaborative and participative learning To share content material with students easily To improve the quality of teaching	None	None
Professions and Applied Sciences (PAS)	None	None	None	None	None		To improve the quality of teaching To share content material with students easily	None
Humanities and Arts plus Social Sciences (HASS)	None	None	None	To experiment with new tools	To experiment with new tools To improve the quality of teaching	To experiment with new tools To improve the quality of teaching	To improve the quality of teaching To share content material with students easily	None

5.4. Ways to use Social Media tools as part of a course

Ways of use as part of a course were investigated through a set of predefined items, among which respondents were required to choose the most appropriate ones: “Students were assigned to view content” (VC), “Students were assigned to comment on content” (COC), “Students were assigned to create content” (CRC), and “Other way” (OW).

“Students were assigned to view content” was mostly used for YouTube-Vimeo (N = 1273; 81.4%) and SlideShare (N = 374; 71.6%). “Students were assigned to comment on content” was mainly chosen for Facebook (N = 227; 30.1%). “Students were assigned to create content” was mostly identified for Blogs-Wikis (N = 258; 28.3%). Lastly, “Other way” was mainly chosen for Twitter (N = 118; 42.3%) and LinkedIn (N = 92; 41.6%). Detailed results are reported in Table 6.

Moreover, a number of Chi-square tests were performed to examine the association between ways of use as part of a course and scientific discipline. We decided to test this association because scientific discipline seemed the most discriminating among the variables tested for frequency of use.

The association between the variables was significant for Twitter for COC and OW options (respectively, $\chi^2(2; N = 279) = 13.221, p < 0.01, Cramér's V = 0.218$; and $\chi^2(2; N = 279) = 18.033, p < 0.001, Cramér's V = 0.254$). As for Facebook, the association was significant for COC, CRC and OW options (respectively, $\chi^2(2; N = 753) = 11.567, p < 0.001, Cramér's V = 0.124$; $\chi^2(2; N = 753) = 6.865, p < 0.05, Cramér's V = 0.095$; and $\chi^2(2; N = 753) = 19.697, p < 0.001, Cramér's V = 0.162$). For LinkedIn, the association was significant for CRC option ($\chi^2(2; N = 221) = 6.312, p < 0.05, Cramér's V = 0.169$). For Podcast, the association was significant for VC and OW options (respectively, $\chi^2(2; N = 307) = 7.288, p < 0.05, Cramér's V = 0.154$, and $\chi^2(2; N = 307) = 13.359, p < 0.005, Cramér's V = 0.209$). For Blog-Wiki, the association was found significant for COC, CRC, and OW options (respectively, $\chi^2(2; N = 912) = 37.595, p < 0.001, Cramér's V = 0.203$; $\chi^2(2; N = 912) = 20.021, p < 0.001, Cramér's V = 0.148$; and $\chi^2(2; N = 912) = 12.323, p < 0.01, Cramér's V = 0.116$). As for YouTube-Vimeo, significance was found for COC and OW options (respectively, $\chi^2(2; N = 1564) = 46.045, p < 0.001, Cramér's V = 0.172$; and $\chi^2(2; N = 1564) = 10.389, p < 0.001, Cramér's V = 0.082$). The association of variables for ResearchGate-Academia.edu was found significant for VC and OW options (respectively, $\chi^2(2; N = 633) = 11.645, p < 0.01, Cramér's V = 0.136$; and $\chi^2(2; N = 633) = 13.942, p < 0.001, Cramér's V = 0.148$). Finally, for SlideShare, the association was found significant for VC, COC and OW options (respectively, $\chi^2(2; N = 522) = 11.905, p < 0.001, Cramér's V = 0.151$; $\chi^2(2; N = 522) = 8.561, p < 0.05, Cramér's V = 0.128$; and $\chi^2(2; N = 522) = 7.147, p < 0.05, Cramér's V = 0.117$).

Inspection of adjusted standardized residuals showed that for Twitter, “Students were assigned to comment on content” was more represented in the MCSN and in the HASS groups, while “Other way” was more represented in the PAS and in the HASS groups. For Facebook, “Students were assigned to comment on content” option was represented more in the MCSN and in the HASS groups, “Students were assigned to create content” option was more represented in HASS group, and “Other way” option was more represented in the MCSN and in the HASS groups. As for LinkedIn, the “Students were assigned to create content” option was represented more in MCSN group. For Podcast, “Students were assigned to view content” was more represented in the PAS group, while “Other way” option was more represented in the PAS and in the HASS groups. For Blog-Wiki, “Students were assigned to comment on content”, “Students were assigned to create content” and “Other way” options were prevalent in the MCSN and in the HASS groups. As for YouTube-Vimeo, “Students were assigned to comment on content” option was equally present in the three groups, while “Other way” option was prevalent in the MCSN and in the HASS groups.

Table 6

Ways to use Social Media tools as part of a course.

	Students were assigned to view content	Students were assigned to comment on content	Students were assigned to create new content	Other way
Twitter (N = 279)	98 (35.1%)	73 (26.2%)	27 (9.7%)	118 (42.3%)
Facebook (N = 753)	397 (52.7%)	227 (30.1%)	93 (12.4%)	222 (29.5%)
LinkedIn (N = 221)	83 (37.6%)	43 (19.5%)	15 (6.8%)	92 (41.6%)
Podcast (N = 307)	201 (65.5%)	56 (18.2%)	25 (8.1%)	63 (20.5%)
Blog-Wiki (N = 912)	573 (62.8%)	242 (26.5%)	258 (28.3%)	130 (14.3%)
YouTube-Vimeo (N = 1564)	1273 (81.4%)	316 (20.2%)	112 (7.2%)	128 (8.2%)
ResearchGate-Academia.edu (N = 633)	415 (65.6%)	115 (18.2%)	77 (12.2%)	99 (15.6%)
SlideShare (N = 522)	374 (71.6%)	63 (12.1%)	68 (13.0%)	76 (14.6%)

For [ResearchGate-Academia.edu](https://www.researchgate.net/), “Students were assigned to view content” and “Other way” options were represented more in HASS group. Finally, for SlideShare “Students were assigned to view content” option was represented more in the PAS group, “Students were assigned to comment on content” was prevalent in the MCSN group, while “Other way” options were prevalent in the HASS group.

5.5. Obstacles to using Social Media tools in teaching practice

As far as barriers to Faculty use of Social Media in teaching were concerned, these were identified in a list of sixteen items though a four-point Likert-type scale of relevance (1 = not important; 4 = highly important). A principal component analysis was performed to synthesize the information and group items into a smaller set of composite variables, Promax rotated.

We found that a 3-component solution most approached a simple solution (i.e. each item having a substantial [>0.30] loading on only one factor, with small/negligible loadings on the other factors) while accounting for a substantial amount of variance (49.7%) (Table 7).

According to the content of the items, components were labelled as:

- F1: Cultural and socio-relational dimension
- F2: Pedagogical and teaching dimension
- F3: Administrative and managerial dimension

While the first factor includes items related to students' distraction, traditional roles, privacy management, and issues related to the relationship with students, the second factor deals specifically with issues concerned with the management of pedagogical and teaching concerns such as workload, pedagogical effectiveness and diffusion among students. The third factor comprises administrative and institutional issues such as time consumption, institutional support and technical integration among tools.

Table 7

Pattern matrix from the principal component analysis on barriers to Faculty use of Social Media in teaching.

Item	Component		
	1	2	3
Concerns about privacy	.535	–.386	.376
Concerns about the integrity of online student submissions	.537	–.213	.382
Lack of integration with my school's Learning Management System (LMS)	–.185	.102	.828
Lack of support at my institution	–.290	.250	.786
Need to separate my course accounts from personal accounts	.247	–.054	.502
Takes too much time to learn or use	–.045	.739	.054
Inability to measure its effectiveness	.367	.541	.048
Concerns about grading and assessment	.444	.412	.062
Scarcity of diffusion among students	–.081	.431	.244
Lack of purposeful features for teaching	.236	.295	.241
Increase of workload	.131	.648	–.071
Weakening of students and teachers' traditional roles	.707	.050	–.153
Effects on students' distraction	.813	.025	–.164
Loss of warmth of human contacts	.707	.109	–.162
Scarcity of good practices for some tools (e.g. social network sites)	.483	.187	.184
Scattering of participants and information in multiple environments	.714	.125	–.021
Correlation with 2	.277		
Correlation with 3	.331	.208	

Bold indicates each item having a substantial [$>.30$] loading on only one factor.

Finally, we computed the component scores and used them as criterion variables in a one-way analysis of variance (ANOVA) model to test their association with scientific discipline. The results revealed significant differences among the scientific discipline categories in Factor 1 and Factor 3 (respectively, $F(1,1801) = 13.146$, $p < 0.001$, $\eta^2 = 0.014$ and $F(1,1801) = 7.112$, $p < 0.01$, $\eta^2 = 0.008$), though a weak effect size was found. No difference was found for Factor 2 ($F(1,1801) = 1.393$, $p = 0.248$, $\eta^2 = 0.002$).

Games-Howell post-hoc tests revealed that the PAS group ($M = 0.04$; $SD = 0.98$) had a higher score than the HASS group ($M = -0.12$; $SD = 0.98$) and that the HASS had higher scores than the MCSN group ($M = 0.18$; $SD = 1.04$) in Factor 1. The PAS group ($M = 0.12$; $SD = 0.99$) had higher scores than the HASS group ($M = -0.09$; $SD = 0.98$) in Factor 3.

5.6. Issues from open comments

As far as the question “Do you think that social media are useful for teaching?” is concerned, we collected 668 open comments (10.9% of the total number of respondents), of which 292 were related to affirmative answers, 243 to negative ones and 133 to uncertain ones. Respondents who emphasised the positive role of Social Media ($N = 292$) underlined that these tools provide several sources of information and of various nature (experts, documents, sites, etc.) useful to prepare and deliver teaching lessons, as well as their dialogical and communicative value in supporting the role of discussion beyond the classroom. Social Media are perceived as tools that may enhance students' motivation and an easy way to foster collaboration among study groups, as well as means through which to build informal communication with students.

Looking at the answers relating to negative claims ($N = 243$), respondents pointed out the unequalled efficacy of traditional ways of teaching and learning, such as face-to-face lessons, paper-based sources of knowledge (e.g. books), and face-to-face communication between teachers and students. Social Media tools are also perceived as a waste of time, a great concern about privacy and a risk of weakening the traditional roles of teacher and student. Sceptics of Social Media declared a strong preference towards the Learning Management Systems in use in their universities or their official websites as sources of reliable information. The latter are perceived as more efficient and reliable both to manage communication with students and as sources of reliable content, as well as offering a better level of security and protection. On the contrary, Social Media, due to their fragmented nature, may encourage a lack of coherence and integration.

Uncertain comments ($N = 133$) were mainly linked to the lack of experience in the use of Social Media for teaching. In these cases, respondents seem to be open to test new practices under certain conditions such as institutional support, improvement of digital competence, availability of examples of good practices, etc. Other respondents emphasised the relevance of the context claiming that Social Media can be adopted for teaching depending on specific factors, like the discipline, the number of students and their ability, the relationship between students and teachers.

Another question invited respondents to add open comments to the question “What specific social media sites (if any) do you find most valuable for teaching?”. Inspecting the comments provided by faculty members ($N = 331$, 5.4% of the total number of respondents), it emerged that Twitter and Facebook may serve purposes such as managing rapid communication with students about scheduling of lectures, exams and office hours, especially with foreign students. Twitter can be used to tackle content issues such as political communication. Facebook and Blogs-Wikis were particularly appreciated for managing students' collaborative groups, while YouTube, Podcasts and SlideShare were considered useful resources to provide students with registered lessons and to retrieve content material for lectures. Professional and academic social networks such as LinkedIn and ResearchGate-Academia.edu can be used to build alumni and academic networks and for job placement.

The open comments to the question “How much of a deterrent are the following [see the list of 16 items provided in [Table 7](#)] to your use of Social Media in your courses?” ($N = 285$, 4.6% of the total number of respondents) largely overlap with the views expressed as negative comments to the question about the usefulness of Social Media.

A number of comments ($N = 1151$, 18.7% of the total number of respondents) were collected at the end of the questionnaire relating to the faculty interest in the topics dealt with in the survey. These are interesting in so far as they also contribute to catch the faculty point of view on the role of Social Media for teaching and learning. Overall two main approaches emerged, one considering the survey as important, useful and interesting, while the other as useless and irrelevant. On one hand, the survey was seen as important not only because it looked at current topics challenging the future of higher education, but, interestingly, also because it stimulated a reflection on how to reshape faculty current teaching practices with new alternative ones. The interest of the survey was also acknowledged by scholars who totally distrust Social Media for teaching, with the argument that a better knowledge of Social Media may help to stem their inappropriate use among young people and reduce their damage. On the other hand, the topics of the survey are felt as irrelevant since Social Media are inadequate for teaching; they distract students and entail a large waste of time for teachers. In some way, those who contrast Social Media in higher education took the opportunity at the end of the questionnaire to reaffirm the several negative claims pointed out in the previous sections of the survey.

6. Discussion

Social Media are still far from being currently used in academic contexts for teaching. Our results globally show a general low level of faculty adoption that seems to confirm resistance emphasised also by previous studies in relation to teaching practices ([Brown, 2012](#)) or by previous administrations of the survey in the US context ([Moran et al., 2012](#)). Indeed, the

frequency of use is generally low with little more than 40% of academics using at least one tool for teaching on a monthly basis and less than 40% declaring that Social Media are useful for teaching purposes.

In the following, interpretation of the results according to the research questions are provided.

6.1. The association between socio-demographic variables and teaching use of Social Media

As for the first research question, looking at the socio-demographic variables that are most related to frequency of use, the results demonstrate that gender has a limited impact on the decision to use Social Media for teaching. However, slight differences were found with males preferring Twitter and females prevailing in the use of Podcasts, YouTube-Vimeo, ResearchGate-Academia.edu and SlideShare. On the contrary, age is a more influential variable, particularly referring to certain tools such as Facebook and Twitter. This result is in line with other studies on faculty use of Social Media (Dahlstrom, 2012; Greenhow & Gleason, 2014; Moran et al., 2012) which found that faculty members adopt and use Social Media differently depending on their age: the younger they are, the more likely they tend to use Social Media tools. This finding is also consistent with more general studies on Facebook or Twitter usage showing that females and young people spend more time on Facebook and have more Facebook friends (McAndrew & Jeong, 2012). However, this data should be combined with the results relating to the impact of the number of years of teaching. Though this variable is relatively significant, the main trend is that higher education instructors with higher numbers of years of teaching are more prone to use Social Media, particularly referring to Twitter. Despite the fact that people with higher numbers of years of teaching are not necessarily older, we can assume that there is an association between numbers of years of teaching and age. Therefore, one could say that older academics are using Twitter more than younger ones. This brings us to conclude that age is a variable that requires more investigation.

Moving to the academic title, we found that, with the exception of LinkedIn, which is more common among Full Professors, Podcast, Blog-Wiki, YouTube-Vimeo, Facebook, Twitter and the remaining Social Media are more used by Assistant Professors rather than Associate or Full Professors. From this point of view, one cannot draw the conclusion that the academic title is a discriminating factor to predict the adoption of Social Media. However, it is worth observing that scholars in a higher level of their career and likely older are using Social Media less than younger academics, and this would be consistent with the results relating to the age as a discriminating factor that have been reported elsewhere (Dahlstrom, 2012; Greenhow & Gleason, 2014; Moran et al., 2012). Once again, age seems to be a factor that needs further analysis.

If results on age, seniority and academic title do not show clear and definite trends, the scientific discipline seems to be the most influential variable among the factors explored. Overall, teachers in the Humanities and Arts plus Social Sciences sector are using Social Media more than teachers in other disciplines. This could be explained by what emerged from other surveys, which reported that teachers in the Mathematics and Computer Science plus Natural Sciences group stress a lack of relevant content on Social Media sites for their particular discipline (Moran et al., 2012). It might also be that teachers in the Humanities and Arts plus Social Sciences are less interested in finding relevant content when compared to their counterparts, in so far as they are more concerned with other Social Media affordances like supporting communication, sharing, and content creation. However, this explanation would request further investigation particularly considering the results of the following sections on motivations and specific uses.

It is also interesting to observe that in most cases the Humanities and Arts plus Social Sciences group prevails in the use of Twitter, Facebook, Blog-Wiki, YouTube-Vimeo and Podcast, while Professions and Applied Sciences group shows a propensity for using more professional tools such as LinkedIn and ResearchGate-Academia.edu. Blog-Wiki is also used by teachers in the Mathematics and Computer Science plus Natural Sciences, while SlideShare is common among Professions and Applied Sciences. However, these differences linked to the subject matter are not surprising. Cao et al. (2013) showed that task–technology compatibility between teaching and Social Media applications has a positive effect on Social Media utilisation in teaching. Though our results did not indicate that task–technology compatibility has a positive effect, they confirm that there is an important association between Social Media type and scientific area.

6.2. Motivations to use Social Media tools in teaching

As for the second research question, about the motivations to use Social Media tools in teaching, while Facebook and Twitter are mainly viewed as means to motivate students, other Social Media such as Blog-Wiki, Podcast, YouTube-Vimeo, SlideShare and ResearchGate-Academia.edu are seen as tools that can be used to improve the quality of teaching or to share educational content. YouTube-Vimeo is also used to increase students' motivation, while Facebook to share content. Surprisingly, motivations for using Social Media such as the familiarity that students have with these tools as “digital natives” are relatively common. Though very often these motivations are used as rationale for the adoption of innovative devices in education (see, for example, Ajjan & Hartshorne, 2008), academics seem to be more interested in testing new practices or improving the quality of their teaching rather than attracting students through the use of computer and the Internet. For example, as emerged from open answers, academics are using Social Media to prepare their lectures and to support collaborative work among students, in particular through Facebook and Blog-Wiki.

In addition, motivations seem to vary, although to a limited extent, according to the scientific discipline particularly referring to Podcast, Blog-Wiki, YouTube-Vimeo and ResearchGate-Academia.edu. Indeed, teachers in the Humanities and Arts plus Social Sciences sector are using Podcast, Blog-Wiki and YouTube-Vimeo to experiment with new tools, or Blog-Wiki,

YouTube-Vimeo and ResearchGate-Academia.edu to improve teaching quality, while teachers in Mathematics and Computer Science plus Natural Sciences prefer Blog-Wiki and YouTube-Vimeo to promote collaborative learning. Both Humanities and Arts plus Social Sciences and Professions and Applied Sciences groups are motivated to use ResearchGate-Academia.edu for sharing content material with students, while instructors in Mathematics and Computer Science plus Natural Sciences prefer YouTube-Vimeo.

The hypothesis that teachers in the Humanities and Arts plus Social Sciences might be more interested in Social Media affordances (see sub-heading 5.1) seems to be partly confirmed by the results about motivations in so far as they are unique in selecting the option “To experiment with new tools” as a reason to adopt Social Media. However, like the other two categories of teachers, they are also using Social Media to share content with students.

6.3. *How Social Media tools were used in teaching*

When considering the specific uses through which Social Media are being incorporated into current practices, no significant differences may be identified between the different tools, while the general trend is that Social Media are mainly exploited to visualise resources. Indeed, no matter what tool is considered, they are more used to access content than to comment pre-existing resources or create new material. This tendency to use Social Media as means to support transmissive approaches to teaching and learning is consistent with other studies on teachers' use of these tools (Moran et al., 2012) and also with more general works on Social Media usages. For example, in a study on creative uses of emerging digital technologies, Hargittai and Walejko (2008) found that, despite the affordances of Social Media in supporting content production and sharing, only few people are actually creating and distributing content. The main trend is to consume rather than to produce digital resources. As suggested in the literature (Crook, 2012), the incorporation of more participatory practices into formal settings of learning can raise tensions that may prevent higher education instructors to adopt Social Media in their current practices. A certain scepticism to use Social Media in a constructivist perspective entailing more engaging activities may be also explained by the lack of evidence about the instructional effectiveness of these tools (Greenhow & Askari, 2015).

In the case of tools like Twitter and LinkedIn, it emerges that they were also used to circulate information about the course or to support communication between teachers and students or among students, or also to promote community building.

6.4. *Obstacles that prevent using Social Media in teaching practice*

The analysis of the findings related to the obstacles that prevent academic staff from using Social Media for teaching confirms previous research on barriers and facilitators to the adoption of these tools (Brown, 2012; Gao et al., 2012; Manca & Ranieri, 2013, 2015; Rogers-Estable, 2014; Scott, 2013; Veletsianos & Kimmons, 2013; Veletsianos et al., 2013). Indeed, coherently with other studies (Manca & Ranieri, 2013; Veletsianos & Kimmons, 2013), we found that cultural and social factors such as the erosion of teachers' traditional roles, the management of relationships with students or the issue of privacy threats are limiting the teaching use of Social Media, with some differences depending on the scientific discipline. It emerged that in the area of Professions and Applied Sciences cultural and social factors are more relevant than in the Humanities and Arts plus Social Sciences sector. At the same time, these factors are more influential in the Humanities and Arts plus Social Sciences sector rather than in the Mathematics and Computer Science plus Natural Sciences field.

Another important factor is represented by the pedagogical issues, though there are no differences between diverse scientific areas. Combining the statistical results with the open answers, a recurrent issue is that face-to-face teaching is perceived as pedagogically more effective than online teaching. No matter what the specific online tools are, either Social Media platforms or a Learning Management System, most academics perceive the direct relation with the students as an invaluable means to reach educational results. Similarly, Moran et al. (2012) found that faculty (and their students) prefer face-to-face instruction.

The third factor, which refers to the administrative and institutional issues, was found to play an important role, as suggested by previous studies (Buchanan et al., 2013) which call for adequate investments in technical infrastructure and support to innovate teaching practices and educational services. However, this dimension proved to be more significant in the Humanities and Arts plus Social Sciences sector, where the lack of technical support and, as a consequence, the waste of time become particularly influential. One might think that this feeling of not being supported at a technical level may lead people to trust more in efficient and reliable systems such as Learning Management Systems. Though we cannot draw this conclusion, open answers indicate that Social Media are perceived as too uncertain means to manage educational communication in institutional contexts. To conclude, we can say with Cao et al. (2013) that perceived usefulness is an important factor that motivates the use of Social Media in higher education teaching, whilst perceived risk negatively affects motivation to use them.

7. Limitations

Although the entire academic population of the Italian universities was addressed by the survey, thus constituting one of the first extensive surveys in the field, the study presents a number of limitations, among which the low level of response rate, i.e. 10.5%. Indeed, though online surveys get on average a response rate of 11% lower than traditional instruments, such as paper questionnaires or telephone surveys (Fan & Yan, 2010), in our case there were a number of difficulties related to

retrieving email addresses or the actual receipt of emails sent. Moreover, with the increasing use of email spam filtering techniques, invitations sent by email might have been blocked by spam filters. It should also be added that not all academics check their institutional email addresses, while preferring their personal ones. Moreover, in spite of the general widespread diffusion of digital tools and Internet access, a digital divide in terms of frequency of use could also be assessed among academic population. This might have affected willingness to participate in the online survey, as highlighted by some researchers with reference to diverse brackets of population and their socio-demographic characteristics (Diment & Garrett-Jones, 2007; Teo, 2013).

Further reasons for the low response rate may be linked to a lack of familiarity with the topic, or to negative pre-conceptions of Social Media, or also to the time required to fill in the questionnaire (20 min). Finally, since the survey required participants with a teaching background, this requirement might have brought the researchers who do not hold a teaching position not to fill in the survey. We also recognize that all these limitations might have led us to identify a sample of responses with a strong bias in terms of (either positive or negative) interest and importance of the topic.

In future surveys a series of measures could be adopted to enhance the response rate, like university sponsorship and pre-notification, or the use of incentives (Cook, Heath, & Thompson, 2000). Moreover, exploiting the technical capabilities of survey tools that allow tracking of respondent status (e.g. partial respondent), using personalized emails (Monroe & Adams, 2012), or by making use of data derived from multiple methods of gathering feedback are other measures that could increase the response rate (Nulty, 2008).

8. Conclusion

This study examined the actual use, the motivations, the potentials and obstacles of teaching with Social Media in higher education. Despite its limitations, it emerges that Social Media are playing a marginal role in academic life. A combination of factors, including some socio-demographic variables, institutional issues, pedagogical views, pragmatic reasons and values, seem to be slowing down the adoption of Social Media in current teaching practices.

As far as the socio-demographic variables are concerned, the age and the scientific discipline were found as the most relevant predictors of use of Social Media for teaching. However, further research would be necessary to better understand the role of age. Indeed, results on this variable were not always consistent with results relating to other variables like seniority. In some way, from our study, we cannot conclude that being younger necessarily leads to adopt Social Media, especially those based on high levels of reputation in a professional field (Kirkup, 2010; Manca & Ranieri, 2016). Also the association between the decision to adopt Social Media for teaching and the scientific discipline should be further explored, notably to better understand this association in relationship to specific motivations and uses. In an attempt to explain the different behaviours across the different academic disciplines, we claimed that teachers in Humanities and Arts plus Social Sciences are more prone to use Social Media for their pedagogical affordances than for finding relevant teaching content. A series of clues brought us to this conclusion, but further research on teaching uses in specific academic fields would increase our understanding of how teachers are using or not Social Media for teaching. In addition, though the academic title did not show having a significant impact on the decision to embrace Social Media, further studies on the weight of this variable would be beneficial considering the importance that academic identity and role have on faculty members' practices with Social Media (Veletsianos & Kimmons, 2013).

When coming to obstacles such as cultural resistance, traditional visions of instruction, lack of technical support and perceived risks, coherently with other studies (Brown, 2012; Gao et al., 2012; Manca & Ranieri, 2013, 2015; Rogers-Estable, 2014; Scott, 2013), we found that they are discouraging academics from embracing social platforms and adopting more participatory approaches. In this situation, institutions should reconsider their role in providing support to academic staff. Research has stressed how many teachers require to be sustained by academic administrators, provided with technical and pedagogical guidance and support. Top-down approaches with institution management advising and guiding faculty members would increase their web self-efficacy and compensate their lack of digital competences. At the same time, bottom-up approaches, such as identification and sharing of creative teaching practices also suggested by students, could provide the incentive to re-think implicit pedagogies and modify traditional ways of teaching. This would open the way to reconsider certain cultural resistance and shift the focus from unconditional closure towards innovation to more flexible attitudes, which look on Social Media as cultural resources that can be used to improve teaching and learning in contemporary universities.

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