The expression of social presence through the use of figurative language in a web-based learning environment

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Abstract

The present paper’s aim is to investigate how the participants of an online learning environment employed written language in a creative way through the spontaneous use of figurative language. The content analysis showed that figurative language was a means to express the social dimension either to refer to the self, feelings and emotions, or to conceptualize the components of the virtual learning setting. The research context was a ten-week course, delivered at a distance via a computer conferencing system, addressed to fifty-seven student teachers. The analysis was carried out in the social and meta-cognitive reflection areas, those areas which are mainly related to the expression of the social dimension. The study had three different purposes: to investigate the distribution of figurative language during the course length; to explore the relation between the participants’ educational background and their use of figurative language, and to examine the relation between figurative language and the structure of the communication threads. The results indicate that participants tended to use figurative language more when meaningful or critical events happened. The higher the emotional involvement was, the more metaphorical language was adopted. Further results suggest that the adoption of figurative language seems to be related more to individual attitude, than to other factors such as educational background. Finally, figurative language occurrences were not concentrated in specific kinds of postings or threads and did not encourage further use of figurative language.

Keywords: web-based learning, social presence, emotions, figurative language, Computer-Mediated Discourse Analysis
1. Introduction

Ho avuto l'impressione di far visita ad una balera, un locale dopo una festa: lattine ovunque, vuoti a perdere (o rendere?) ovunque, avanzi, brandelli, scritte...... persino qualche capo di abbigliamento che lascia intuire come la vita li dentro si sia consumata in ogni suo aspetto, sino in fondo...

I felt like I was in a dance hall, or a club after the party was over: cans everywhere, empty bottles everywhere, scraps, shreds, writings...... some items of clothing as well, showing us how life in there had been lived in every way, to the very end......

(from a student’s private communication when the course was over)

Social, relational and affective dynamics are gradually receiving more consideration in the study of learning processes. Cognitive processes are no longer considered apart from the affective and emotional ones. Furthermore, they seem to be closely related. This kind of co-origination is also borne out within the context of neurosciences (Damasio, 1994; LeDoux, 1996), Artificial Intelligence (Picard, 1997; Dautenhahn, Bond, Cañamero, & Edmonds, 2002; Trapp, Petta, & Payr, 2003), cognitive psychology (Forgas, 2000; Frijda, Manstead, & Bem, 2000) and social sciences (Elster, 1999), with positive effects on the educational context (Gardner, 1983; Goleman, 1995) and on the context of web-based learning as well.

Social interaction appears to be more and more the prerequisite for collaborative learning, combining the advantages of a learning strategy that promotes deeper level learning, critical thinking, and shared understanding, with those related to the development of social and communication skills (e.g. Garrison, Anderson, & Archer, 1999). Despite these benefits, some authors caution against restricting social interaction to cognitive processes or taking it for granted (Kreijns, Kirschner, & Jochems, 2003). This would minimize the importance of building trust processes and the sense of warmth and belonging, both necessary to establish the ideal climate for collaboration and learning.

What characterizes the intertwining of the educational and socio-psychological dimensions in these kinds of settings is that they are strictly linked to the dialogues that participants mutually construct - the written, asynchronous nature of communication is the preferred choice of most of the learning experiences occurring on the Internet (e.g. Feenberg, 1989). In the context of Computer Mediated Communication (CMC), even the socio-affective dimension of learning acquires specific features as it is expressed and biased by written discourse.
One of the early approaches in the study of CMC emphasized that the lack of non-verbal cues (e.g. facial expression, posture, gesture, proximity) would limit the richness and scope of communication (Short, Williams, & Christie, 1976). According to many studies, CMC is an impoverished means of communication which does not enable users to draw important information about the context, the commonly shared rules of conduct and their influence on communication, all of which foster uninhibited speech (e.g. flaming) (Sproull & Kiesler, 1986). Moreover, as anonymity, which is a frequent feature of online interactions, reduces these control indicators, communication would be more de-individualized and de-personalized, and that would have different and unpredictable consequences on the various speech contexts (Spears & Lea, 1994).

Lacking non-verbal indicators, CMC was thought to be characterized by a very low social presence level and because of these feature shortages typical of face-to-face communication, the learning purposes could be invalidated (for a review of positions see Leh, 2001).

In more recent times, a number of studies have shown that with solely written communication, typically used in chat and e-mail, it is possible to stimulate social and affective presence, provided that interlocutors are allowed to freely manage their time (Parks & Floyd, 1996; Jacobson, 1999). Other authors underlined the similarity between the development of relationships in both face-to-face and online contexts, showing that although the latter need more time to grow, they can be more socially oriented than the former (Walther, 1996). Users seem to compensate for the communicative lack of written discourse with linguistic inventions and adaptations, in order to express the metacommunicational features of non-verbal communication with appropriate orthographical strategies (e.g. emoticons, typographical marks and other textual features, including the use of capital and lowercase letters, ellipsis, exclamation marks, as well as typing errors) (Murphy & Collins, 1997). In this way, a higher degree of familiarity and intimacy in content, style, structures, and timing of the exchanged postings would not only be a linguistic adaptation to incorporate colloquial and informal registers, but could also strike the balance between the features of the medium and an acceptable level of immediacy (Danchak, Walther, & Swan, 2001).

In contrast with the view that CMC students adopt verbal immediacy behaviours to make up for the lack of non verbal and vocal cues, we feel that this expression of the social dimension (including emotions and affectivity) must not be seen as a substitute or a surrogate way to express the same communication needs that may emerge in a face-to-face setting, but rather as a very different medium that should be taken into consideration. We believe that written language conveys specific social and affective affordances (Kreijns, Kirschner, & Jochems, 2002) whose nature is not directly comparable to face-to-face communication in analogous contexts (i.e. learning groups).
Hence in the present paper we investigate figurative language as one of the possible indicators of social presence traceable in written language. By figurative language we mean an iconic use of language aimed at expressing a non literal meaning, not just metaphors, but also hyperboles, idioms, understatement, similes, etc. (Roberts & Kreuz, 1994). Previous research in the field of online learning has identified metaphors as a means of bonding in online learning groups, helping participants to reduce isolation and foster the creation of social presence among students and tutors. In De Simone, Lou, & Schmid (2001), for example, the metaphor of a ship was used to foster students’ sense of belonging to a larger community and to provide a framework for role assignment, identity and responsibility.

In the research here described we investigate how the participants of an online ten-week course used written language in a creative way, through the spontaneous use of figurative language. The analysis shows that figurative language was a means through which participants projected themselves, i.e. their identity, emotions, feelings, as well as being their way of conceptualizing the online learning environment.

The aims of the present research are to analyse the distribution of figurative language that emerged in the social areas throughout the course, the relation between the participants’ educational background and their use of figurative language and finally the relation between figurative language and the structure of the written threaded discourse.

A parallel aim of our research was the classification of the figurative language occurrences into two categories, Identity and Context. Figurative language was found to be the key to interpreting how participants gave shape and body to their online identities, as well as to the setting in which they were interacting, in relation to their in-progress learning experience.

2. Theoretical framework

2.1. Social presence in online learning

First introduced by Short et al. (1976, p. 65), social presence was defined as the “degree of salience of the other person in a mediated communication and the consequent salience of their interpersonal interactions”. The term was soon after associated with the concept of media richness, according to which social presence is a quality of the communication medium itself. Communication media endowed with more bandwidth (e.g. audio-video equipment) would convey more social presence and vice versa (Rice, 1993).

In the context of online learning, social presence was recently redefined as “the ability of learners to project themselves socially and emotionally as ‘real’ people into a community of learners” (Garrison et al., 1999, p. 94). Social presence should support cognitive objectives as it is supposed to encourage and support meaningful critical thinking processes in a community of learners. Affective objectives that may result in
appealing, engaging, and rewarding group interactions may lead to an increase in academic, social, and institutional integration and results (Rourke, Anderson, Garrison, & Archer, 1999).

A number of studies investigated social presence as a predictor of satisfaction and perceived learning (Gunawardena & Zittle, 1997; Richardson & Swan, 2003), and as an indicator of success and quality of the learning experience (Stacey, 2002; Shin, 2003). All these studies differently combined the adoption of survey instruments (i.e. questionnaires based on graduated scales) and the analysis of students online interaction using qualitative and quantitative methods (for a survey of instruments, see van Baren & IJsselsteijn, 2004). Few studies have so far investigated the expression of social presence through the content analysis approach. Rourke et al. (1999), for instance, identified twelve indicators of social presence belonging to three categories (affective, interactive and cohesive), based on previous research, literature, and analysis of transcripts, which were applied to transcripts of online communication. To these, Swan (2002) added new indicators that match quite well with the ones derived both from face-to-face analysis and research on previous online learning.

Many researchers and practitioners have begun to extensively study the role of the social dimension in online learning, in relation to emotions. These studies have focussed on a number of indicators: the effect of stress (Allan & Lawless, 2003), the main emotions involved in the experience of starting a distance education course (Conrad, 2002), and student distress in a web-based course (Hara & Kling, 2000). O’Regan (2003) points to the centrality of some emotions (fear/anxiety, shame/embarrassment, enthusiasm/excitement and pride) in the process of online learning - her study investigated how those emotions seemed to inhibit or enhance the teaching/learning process through an interview where students were asked to speak of a range of both positive and negative emotions which had been associated with, and had impacted on, their learning. MacFadden, Herie, Maiter, & Dumbrill (2005) propose a constructivist model of web-based education emphasizing the use of emotion in elearning, based on the belief that emotional emphasis may facilitate constructivist learning goals.

2.2. Figurative language and articulation of experience

The literature on figurative and metaphorical language has a long, controversial and ongoing tradition. Aristotle (1995) had already pointed out at least two different features related to metaphors: on one side he gave an explicit definition and explained how a metaphor functions (Poetics), on the other he underlined the cognitive function of metaphors in the knowledge processes (Rhetoric). Since then, the linguistic structures and the related syntactic processes (e.g., Lausberg, 1998), the pragmatic value (e.g., Grice, 1967; Searle, 1979; Weinrich, 1976), the psychological and cognitive role (e.g., Glucksberg & Keysar, 1990; Blasko, 1999;
Gibbs & Steen, 1999), the philosophical relevance (Ricoeur, 1978), as well as the links between metaphors and argumentation (Perelman & Olbrechts-Tyteca, 1958), have become the basis of the study and interpretation of figurative language.

From the perspective of cognitive science, metaphor has a central role in everyday discourse and seems to shape the ways we think, creating a bridge from abstract domains to perceptual experience (Katz, Cacciari, Gibbs, & Turner, 1998). As Lakoff and Johnson state (2003, p. 156), “metaphors may create realities for us, especially social realities. A metaphor may thus be a guide for future action. Such actions will, of course, fit the metaphor. This will, in turn, reinforce the power of the metaphor to make experience coherent. In this sense metaphors can be self-fulfilling prophecies”. Hence figurative language helps us to understand a new domain of experience in terms of what is already familiar. According to Ricoeur (1978), it is the rhetorical process by which discourse unleashes the power that certain fictions have to redescribe reality or to build a new one.

At the same time, the use of figurative language, contributing to mutual participation in sense-making, has a central role in establishing a climate of closer intimacy between speakers. The power of imagery facilitates the sharing of personal experience and creates involvement, communicating meanings and emotions (Tannen, 1989, 1992).

The affective and emotional functions of metaphors have been widely investigated in a number of studies. Emotion concepts emerge as conceptual structures which are largely made up of metaphors. In this way, emotion concepts are claimed to be social-cognitive constructions (Kövecses, 2002). Ortony and Fainsilber (1989) underline concrete vividness as the main characteristic of metaphor and figurative language in the expression of emotions. According to them, an important function of metaphorical language is the expression of that which is difficult to express using literal language alone. Their results also indicate that intense emotions lead to a greater use of metaphor than mild emotions in the description of feelings but not in the description of actions associated with intense emotions.

The role of metaphorical expression of emotions has been investigated also in relation to cross-cultural similarities and differences. Even if basic concepts common to all cultures are conceptualized metaphorically in quite similar ways, differences across languages are especially explainable from cultural perspectives. In this way figurative language could be considered as a reflection of a community’s conventional patterns of thought or world views (Boers, 2003; Emanatian, 1995).

Other authors (Gibbs, Leggitt, & Turner, 2002) state that figurative language is so special because it concerns emotional communication, which intimately reflects something about people’s ordinary conceptualizations of their complex emotional experience. In addition, it is a special communicative tool
because it can create that sense of closeness and intimacy between speaker and listener that literal
language cannot achieve, allowing them to speak about their own emotions without touching them directly.
Finally, it seems that people are more likely to use metaphors and metaphorical comparisons to describe
their subjective experience of emotion than to describe the actions they took in response to that emotional
experience (Fussell & Moss, 1998).

3. The research

3.1. The context

The context of this research was a ten-week course delivered at a distance via a computer conferencing
system (Centrinity FirstClass®). The course, addressed to student teachers of the Post-graduate School for
Secondary School-teaching (SSIS) of the University of Genoa, was designed and held during the academic
year 2002/2003 by the Institute for Educational Technology (ITD) on the topic of educational technology
(Persico & Delfino, 2004). 57 students participated in the course, together with 7 tutors and organizers of the
course as well as 10 teacher training supervisors (TTS), in-service teachers chosen from SSIS trainers
whose role was to provide students with their expertise.

Instructional activities were arranged in a number of phases (e.g. analysing and comparing educational
software and discussing its integration in the school setting; collaboratively developing a project for the
implementation of educational technology in a specific school context). The use of some familiarization
facilities (a Café area) and a meta-cognitive reflection area was especially encouraged for socialization and
reflection purposes.

The course was delivered entirely online, with the exception of three face-to-face meetings at the beginning,
middle (end of the 5th week) and end of the course, which aimed to air and discuss problems as well as
review ongoing activities.

3.2. The method

Our research focus was initiated after the course had finished, when we noticed the great amount of
figurative language produced by tutors and students in the social areas. This was particularly relevant as the
use of figurative language had not been influenced nor encouraged by the tutors and the TTS, but was
produced spontaneously by the participants in their written discourse.

In deciding to investigate the linguistic interactions, particularly the figurative ones, we as tutors and
designers of the course were involved in observing the in-progress processes, and this allowed us to have
an inner understanding of the linguistic interactions as they occurred. This non neutral interpretation of each
linguistic phenomenon is particularly valuable when non literal linguistic figures of speech are object of analysis. In this way we were able to claim membership knowledge (see Have, 2002).

In line with models assessing social presence on the basis of content analysis (e.g. Rourke et al., 1999), we decided to concentrate on expressions of self-disclosure, emotions and conceptualization of the online learning environment as important indicators of social presence. We analysed the two communication areas devoted to socialization and reflection purposes, as they were probably more concerned with the expression of social presence. Rather than choosing a sample of interactions, we examined how figurative language was used during the whole length of the course as we were interested in a longitudinal analysis.

Our research explored the following questions:

a) What is the distribution of figurative language during the ten-week course? Is there any connection between figurative language and crucial social events of the course?

b) Is there any relation between the participants’ educational background and their use of figurative language?

c) Is there any relation between the structure of message threads and the use of figurative language?

3.3. The participants

The group of people that posted their messages in the analysed areas was composed of the following members: 55 students (mean age 32.43, SD=6.01; 48 females and 7 males) out of the 57 enrolled in the course, 6 out of the 7 tutors and 5 out of 10 TTS.

At the beginning of the course students were asked to evaluate their familiarity with tools such as e-mail, chat and discussion forum. Their answers show that their self-perceived expertise regarding e-mail was very high (on a scale from 0=none, to 3=very high, the average answer was 2.66, SD=0.49), while they felt they were novices in the use of chat and forums (M=0.81, SD=0.92 and M=0.66, SD=0.83 respectively). Students belonged to different streams (arts, sciences and special education) according to their graduate degrees and to the subjects they intended to teach. Students with a science background (N=24) had graduated in biology, physics, or mathematics; students with an arts background (N=25) had a degree in literature, geography, history, philosophy, classical languages and modern foreign languages; students of the special education stream (N=6) had a variety of degrees, their specialisation being more oriented to a pedagogical approach than to particular disciplines. Students were not required to make a particular number of postings to the reflection area but they were informed that part of the final grade would be based on their participation in these discussions.

3.4. Data and units of analysis
Based on the most common approach in the literature about computer-mediated discourse analysis (i.e. Rourke, Anderson, Garrison, & Archer, 2001; Herring, 2004), we chose the single message (henceforth, posting) as the unit of analysis, since it was recognized as the smallest meaningful, independent and exhaustive data for analysis. They were also the only sizeable data available (hence most significant) to study the temporary distribution of figurative language during the course.

Postings were analysed to find cases in which figurative language was expressing the feelings of participants or references to the learning context (e.g. the CMC environment, the course subject, etc.). A single posting could host more than one figurative language instance (henceforth, occurrence), so segments of postings were considered for both quantitative and qualitative micro-analysis.

All postings were imported into a database as records. Two field groups converged in the record structure. The first group comprised all the objective fields (i.e. all the fields directly derived from the CMC environment); the second group included all the data that were manually inserted by researchers during text analysis (Table 1). The fields had no length limitations and could be fully indexed. Furthermore each field held one or more entries, allowing the researcher to import different pieces of information, which could be retrieved or sorted independently.

Table 1

The database structure

<table>
<thead>
<tr>
<th>Objective fields</th>
<th>Subjective fields$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>- record number (automatically generated)</td>
<td>- figurative language (Yes / No)</td>
</tr>
<tr>
<td>- sender name</td>
<td>- number of figurative language occurrences</td>
</tr>
<tr>
<td>- role (student / tutor / TTS)</td>
<td>- kind of figurative language (Identity / Context)</td>
</tr>
<tr>
<td>- date</td>
<td>- notes by the coder</td>
</tr>
<tr>
<td>- course week</td>
<td></td>
</tr>
<tr>
<td>- posting subject</td>
<td></td>
</tr>
<tr>
<td>- posting text</td>
<td></td>
</tr>
<tr>
<td>- type of posting (first posting of the thread / reply / unthreaded posting)</td>
<td></td>
</tr>
</tbody>
</table>

$^2$ In order to guarantee the coders' independence this second group of fields was recorded twice and then merged.

3.5. Inter-rater reliability

Two authors, as coders, had to decide how many figurative language occurrences, if any, were contained in a single posting. They had to assess whether, in a single message, it was possible to find: occurrences of figurative language used in new and creative ways associated with the in-progress learning experience (i.e. aimed at expressing and giving voice to emotions and feelings, describing the online learning context etc.).

All expressions that had lost their metaphorical import through frequent use (i.e. registered in a dictionary),
and so no longer invited creative interpretation (i.e., catachreses and dead metaphors), as well as abused figures of speech, were rejected.

Coders took part in a training session consisting of a pilot test on a random sample of 70 postings (.8.30% of the total), in order to identify coding problems and disagreements about the interpretation of variables. Subsequently, they worked independently of each other, and applied the same coding instructions to the same set of units of analysis (i.e., the total of postings). They had to indicate if the posting contained figurative language and if so, how many occurrences were present.

From the calculation of different indices of reliability (Capozzoli, McSweeney & Sihna, 1999; Krippendorff, 2003, 2004), acceptable outcomes emerged: while percent agreement was 0.97, Krippendorff’s alpha and Cohen’s kappa were both 0.84.

Disagreements were resolved through discussion and a consensus was reached. It turned out that no single posting contained more than three figurative occurrences. In this phase it was noticed that all the occurrences could be divided into two different categories, since some instances were related to the expression of participants’ Identity (expressed as “I feel like”, “I move like”, “We feel like”, “I see you as”, “I see them as”), others to the expression of feelings and ideas towards the Context of the course (expressed as “The CMC environment is”, “Written communication is”, “The course is”, “The course subject is”, “The computer is”). The process of codification was therefore repeated on the new corpus of figurative occurrences in order to classify them with respect to the categories of Identity and Context. Also in this case, reliable outcomes were obtained (percent agreement was 0.90, Krippendorff’s alpha and Cohen’s kappa were both 0.89) and disagreements were resolved through discussion.

4. Preliminary findings

4.1. Postings

Postings containing figurative language (henceforth FL) were 86 out of 843 examined (10.20%). Table 2 presents the contribution patterns of the total body of postings and of FL postings per role.

Table 2

Contribution patterns of the total body of postings and of FL postings per role
From the data illustrated above, it is possible to appreciate the different ways the three groups of participants contributed to the online discourse: mean postings sent by the tutors are much higher than that of students (M=29.50 and M=11.84), with individual contribution varying sensibly (in fact, standard deviations were respectively 30.36 and 13.17) Respective medians, however, (7.00 for students and 18.00 for tutors) were not significantly different (U=215; P=0.24, two-tailed Mann-Whitney U-Test). As far as the TTS’ contribution in the analysed areas is concerned, they produced a lower number of postings (M=3.00, SD=3.08), since they were more likely to be involved as experts in the areas dealing with the design of educational activities. Regarding the use of FL, students contributed with a percentage of 10.60%, tutors with a percentage of 9.60%, while TTS did not resort to this feature in their postings. However, the medians of postings produced by tutors and students (respectively 5.00 and 1.00) were found to be similar (U=59; P=0.28, two-tailed Mann-Whitney U-Test).

To examine possible differences in contribution patterns between those who sometimes used FL and those who had never resorted to it, participants were divided into subgroups. The results are illustrated in Table 3.

<table>
<thead>
<tr>
<th>Roles</th>
<th>N of contributors</th>
<th>N of postings (and % of total postings)</th>
<th>M and SD</th>
<th>N of contributors</th>
<th>N of FL postings (and % of total FL postings)</th>
<th>M and SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>55</td>
<td>651 (77.22%)</td>
<td>M=11.84 SD=13.17</td>
<td>28</td>
<td>69 (80.23%)</td>
<td>M=2.46 SD=2.78</td>
</tr>
<tr>
<td>Tutors</td>
<td>6</td>
<td>177 (21.00%)</td>
<td>M=29.50 SD=30.36</td>
<td>3</td>
<td>17 (19.77%)</td>
<td>M=5.67 SD=5.03</td>
</tr>
<tr>
<td>TTS</td>
<td>5</td>
<td>15 (1.78%)</td>
<td>M=3.00 SD=3.08</td>
<td>0</td>
<td>0 (0.00%)</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>66</td>
<td>843 (100.00%)</td>
<td>M=12.77 SD=15.79</td>
<td>31</td>
<td>86 (100.00%)</td>
<td>M=2.77 SD=3.10</td>
</tr>
</tbody>
</table>

Table 3
Comparison between the sub-groups of contributors to FL postings and the sub-groups of contributors to postings without FL
<table>
<thead>
<tr>
<th>Subgroups</th>
<th>N of postings (and %)</th>
<th>M and SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students who posted with FL (n=28)</td>
<td>471* (72.35%)</td>
<td>M=16.82 SD=16.31</td>
</tr>
<tr>
<td>Students who posted without FL (n=27)</td>
<td>180** (27.65%)</td>
<td>M=6.67 SD=5.41</td>
</tr>
<tr>
<td>TOTAL (n=55)</td>
<td>651 (100.00%)</td>
<td>M=11.84 SD=13.17</td>
</tr>
<tr>
<td>Tutors who posted with FL (n=3)</td>
<td>157* (88.70%)</td>
<td>M=52.33 SD=26.63</td>
</tr>
<tr>
<td>Tutors who posted without FL (n=3)</td>
<td>20** (11.30%)</td>
<td>M=6.67 SD=5.51</td>
</tr>
<tr>
<td>TOTAL (n=6)</td>
<td>177 (100.00%)</td>
<td>M=29.50 SD=30.36</td>
</tr>
</tbody>
</table>

* with and without FL

** without FL

From these results we can see that those participants who sent FL postings generated the greatest number of total postings (M=16.82 SD=16.31 for students; M=52.33 SD=26.63 for tutors). Moreover, students who posted FL generated almost three times the number of postings sent by students who never used FL, though the subgroup sizes were almost identical, with medians sensibly different (12.00 and 5.00; U=557; P<0.005, one-tailed Mann-Whitney U-Test). For tutors, the differences in contribution patterns are even more striking. Tutors who posted FL generated almost eight times the number of postings sent by those who posted without FL, the two subgroups being identical in size (their respective means were M=52.33, SD=26.63 and M=6.67, SD=5.51).

So it seems that the use of FL is associated with the general production of written discourse. The higher volume of postings people produce, the more they tend to use FL. However, from further data analysis, great differences in individual production have been observed. As a matter of fact, there was no constant proportionality between the general written production and that of FL: results of linear regression analysis show that there is a very marginal linear relationship between the independent variable (total amount of postings) and the dependent variable (FL postings) at the students’ level (F(1,26)=3.45, P=0.07, with β=0.06, t=1.86, P=0.07), whereas no significant linear relationship was found for tutors (F(1,1)=0.53, P=0.60, with β=0.11, t=0.72, P=0.60). We may therefore conclude that there is no clear positive linear relationship between overall postings production and FL postings, suggesting that the tendency to use FL could be an individual characteristic.

**4.2. Occurrences of Identity and of Context**
The number of FL occurrences was 103, distributed over 86 FL postings, with an average of 1.19 occurrences per posting (SD=0.47). In Table 4 we can see the distributions of occurrences of figures relative to Identity and Context (respectively N=57 and N=46), per participant, together with a detailed analysis of occurrences of different figures.

Table 4
Occurrences of Identity and Context

<table>
<thead>
<tr>
<th>Types of figures</th>
<th>Students</th>
<th></th>
<th>Tutors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N of figures (and %)</td>
<td>M and SD</td>
<td>N of figures (and %)</td>
<td>M and SD</td>
</tr>
<tr>
<td>I feel like</td>
<td>20 (23.53%)</td>
<td>M=0.71 SD=1.01</td>
<td>2 (11.11%)</td>
<td>M=0.67 SD=0.58</td>
</tr>
<tr>
<td>I move like</td>
<td>9 (10.59%)</td>
<td>M=0.32 SD=0.72</td>
<td>0 (0.00%)</td>
<td>-</td>
</tr>
<tr>
<td>We feel like</td>
<td>17 (20.00%)</td>
<td>M=0.61 SD=1.31</td>
<td>0 (0.00%)</td>
<td>-</td>
</tr>
<tr>
<td>I see you as</td>
<td>1 (1.18%)</td>
<td>M=0.04 SD=0.19</td>
<td>4 (22.22%)</td>
<td>M=1.33 SD=1.53</td>
</tr>
<tr>
<td>I see them as</td>
<td>4 (4.71%)</td>
<td>M=0.14 SD=0.45</td>
<td>0 (0.00%)</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL Identity</td>
<td>51 (60.00%)</td>
<td>M=1.82 SD=2.93</td>
<td>6 (33.33%)</td>
<td>M=2.00 SD=1.73</td>
</tr>
<tr>
<td>The CMC environment is</td>
<td>9 (10.59%)</td>
<td>M=0.32 SD=0.67</td>
<td>0 (0.00%)</td>
<td>-</td>
</tr>
<tr>
<td>Written communication is</td>
<td>9 (10.59%)</td>
<td>M=0.32 SD=0.55</td>
<td>7 (38.89%)</td>
<td>M=2.33 SD=2.52</td>
</tr>
<tr>
<td>The course is</td>
<td>8 (9.41%)</td>
<td>M=0.29 SD=0.71</td>
<td>1 (5.56%)</td>
<td>M=0.33 SD=0.58</td>
</tr>
<tr>
<td>The course subject is</td>
<td>5 (5.88%)</td>
<td>M=0.18 SD=0.48</td>
<td>1 (5.56%)</td>
<td>M=0.33 SD=0.58</td>
</tr>
<tr>
<td>The computer is</td>
<td>3 (3.53%)</td>
<td>M=0.11 SD=0.31</td>
<td>3 (16.67%)</td>
<td>M=1.00 SD=1.00</td>
</tr>
<tr>
<td>TOTAL Context</td>
<td>34 (40.00%)</td>
<td>M=1.21 SD=1.66</td>
<td>12 (66.67%)</td>
<td>M=4.00 SD=4.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>85 (100.00%)</td>
<td>M=1.52 SD=2.38</td>
<td>18 (100.00%)</td>
<td>M=3.00 SD=2.97</td>
</tr>
</tbody>
</table>

The distributions of figures of Identity and Context produced by students and tutors were significantly different ($X^2=4.27$, df=1, P<0.05). While students gave equal expression to figures of Identity and Context (medians are both 1.00; W=89.50, P=0.22, Wilcoxon signed rank test), tutors preferred those of the Context (medians are 1.00 and 4.00). This was probably due to the fact that students were required to carry out reflection both on the personal experience concerning new learning activities and on the context they were immersed in, whereas tutors tried to focus on the properties and features of the learning environment.

As far as the different expression of figures of Identity in students and tutors is concerned, the former referred more often to expressions of the self, the sum of the occurrences of “I feel like” and “I move like” surpassing the mean of references to “We feel like” ($X^2=26.53$, df=3, P<0.0001; Friedman test). The latter
mostly referred to “you as students”, that is, the way tutors see the students (M=1.33, SD=1.53). Some examples of occurrences referring to figures of Identity are reported here¹:

Maria: *In questo tipo di attività del tutto nuova mi sento un po’ un tartarughina che va piano, piano...* 
*In this brand-new activity, I feel a bit like a little turtle going slowly, slowly, …… (example of occurrence belonging to the type “I feel like”)*

Irene: *Vado piano, in salita, ma come una vecchia 500 vado convinta, a piccoli passi, cercando di imparare sempre qualcosa di nuovo e stupefacente*
*I’m going slowly, uphill, but like an old FIAT 500 I’m determined, I go one step at a time, always trying to learn something new and astonishing. (example of occurrence belonging to the type “I move like”)*

Simona: *È come se in queste settimane avessimo popolato una città vuota e deserta che ora pulsa di vita e di traffico!*
*In these weeks, it is as if we had been populating an empty and deserted city, which now is throbbing with life and traffic! (example of occurrence belonging to the type “We feel like”)*

As regards to the figures of Context produced by students and tutors, students were equally attracted by all the features of the Context ($\chi^2$=4.30, df=4, P=0.37; Friedman test), whereas tutors focused on the written discourse as a means for collaborative learning (M=2.33, SD=2.52). This was especially relevant because in our context students were pre-service teachers who would be required to deal with linguistic and meta-linguistic expression in their future professional career.

Here are some examples of occurrences referring to figures of Context:

Anna: *In questo mondo di ansie un messaggio tranquillizzante è come rugiada nel deserto*
*In this world full of anxiety, a reassuring posting is like dew in the desert. (example of occurrence belonging to the type “Written communication is”)*

¹ Students’ names have been altered to preserve their anonymity; grammar or typing errors have not been corrected. Excerpts are in the original language followed by the parallel free translation.

² A FIAT 500 is a popular Italian car of the 60’s, whose most distinguishing features are the compact dimensions combined with toughness and reliability.
Elisabetta: Ancora una volta vedo confermate le grandi potenzialità dell’uso “semplice” e “feriale” di questo corso e delle TD […] modo rapido ed efficace per far circolare documenti e contenuti che altrimenti rimangono imprigionati in cassetti-di-scrivanie-di-uffici-di persone
Once again the great potential of the “easy” and “everyday” use of both this course and educational technology is confirmed […] it is a fast and effective way to circulate documents and ideas, that otherwise would remain trapped in drawers of desks of offices (example of occurrence belonging to the type “The CMC environment is”)

Roberta: Le tecnologie didattiche sono in qualche modo parenti della Pecora Dolly?
Is educational technology by any chance a relation of Dolly the sheep? (example of occurrence belonging to the type “The course subject is”)

5. Answers to research questions

5.1. Research question A: distribution over time

Research question A aimed to find out whether the use of FL varied during the course, and if so how, at the same time establishing possible connections between FL and crucial social events of the course.

Figure 1 shows the distribution patterns of postings with and without FL across the ten weeks. The two distributions resulted significantly different ($X^2=23.02$, df=8, $P<0.005$).
Apart from the absence of postings in week 1, explained by the fact that the two areas examined were opened at the beginning of the second week, a constant trend of postings without FL across the ten weeks is highlighted. The only large trough in trend is the one registered in week 5. On the contrary, the trend followed by FL postings is marked by the presence of three positive peaks, corresponding to week 2, 6 and 10, and by a negative one (again week 5).

The first positive peak might be considered as a consequence of the first meeting, when people were encouraged to express and manifest their feelings about the novelty of the learning experience (only 7.69% had declared previous online education experience). The negative peak, just before the second face-to-face meeting, is related to a particular and very delicate moment, when there was an atmosphere of unease and uncertainty derived from some not very clear tasks assigned by tutors, they also felt tired because of the workload. However, this negative atmosphere did not emerge so clearly from the written discussion: silence was the strategy they used to show disappointment. The need to emphasize negative feelings with silence seems in line with results of other studies. For example, Michinov and Michinov (in press) underline the presence of a transition period at the midpoint of the collaborative activity showing a decline of task-oriented communications, motivation and positive mood.

Only during the second face-to-face meeting were students able to express their negative feelings and therefore to resolve some of their problems. The second positive peak is associated with the follow-up to the second face-to-face meeting, where students were able to express their negative feelings and therefore to resolve most of their problems. Their conflict with tutors blew up during the meeting, and the discussion and criticism continued online during week 6. Finally, the third positive peak is located just before the final meeting, when students were again encouraged to share their feelings and impressions about the whole course experience. So we can argue that FL was especially used in coincidence with crucial social events, either related to participants’ identity or to the learning context. It does not seem to be related to levels of participation. As demonstrated in the previous section, there was no constant proportionality between the general written production and that of FL. Neither was the distribution of messages across the length of the course associated with higher or lower levels of figurative language.

This hypothesis was further confirmed by comparing aggregate data of weeks 2, 6, 10 with aggregate data of the remaining weeks (50 versus 36 LF postings and 256 versus 501 postings without FL). Their distributions were significantly different ($X^2=19.76$, df=1, $P<0.00001$). The median of FL postings in these three weeks (18.00) was three times higher than that of the remaining weeks (6.00) ($U=18$; $P<0.02$, one-tailed Mann-Whitney $U$-Test), whereas the production of postings without FL was equivalent (medians were respectively 90.00 and 89.00; $U=10$; $P=0.90$, two-tailed Mann-Whitney $U$-Test). To sum up, FL production increases near...
to crucial events, while non FL is equally distributed. The analysis of distribution of occurrences across the ten weeks is shown in Figure 2.

If we compare aggregate data of weeks 2, 6 and 10 with data from the remaining weeks, the two distributions are only marginally different ($X^2=3.60$, df=1, P=0.06). The median of occurrences of Identity in weeks 2, 6, and 10 was four times higher than that of the remaining weeks (12.00 versus 3.00; U=18; P<0.01, one-tailed Mann-Whitney $U$-Test), whereas the median of occurrences of the Context was twice as high than in the remaining weeks (8.00 versus 4.00; U=16; P<0.05, one-tailed Mann-Whitney $U$-Test). This is further confirmed by the fact that the difference between occurrences of Identity and of Context in weeks 2, 6 and 10 is significantly higher than in the remaining ones (medians were respectively 4.00 and -1.00; U=16; P<0.05, one-tailed Mann-Whitney $U$-Test). These data suggest that in conjunction with events involving the entire community, social presence tends to be expressed through figures of Identity, to convey positive feelings (appreciation, sense of relief, enthusiasm, etc.) and negative ones (frustration, anger, discouragement, etc.).

5.2. Research question B: contribution patterns per background

The aim of research question B was to find some kind of relationship between the students' FL contribution patterns and their previous educational background, in order to see whether an arts or a science background could influence their attitude towards FL production. The special education group contribution patterns were not used in the following data because we had no information about their background. The contribution patterns per background are illustrated in Table 5.
Table 5
FL and non FL posting contribution patterns per background

<table>
<thead>
<tr>
<th>Background</th>
<th>All postings</th>
<th>FL postings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N of contributors</td>
<td>N of postings (and %)</td>
</tr>
<tr>
<td>Arts</td>
<td>25</td>
<td>414 (68.32%)</td>
</tr>
<tr>
<td>Science</td>
<td>24</td>
<td>192 (31.68%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>49</td>
<td>606 (100.00%)</td>
</tr>
</tbody>
</table>

Table 5 data shows a significant difference between the number of postings generated by the arts group and that produced by the science one. The medians (9.00 and 5.50, respectively) were significantly different (U=406.50, P<0.02, one-tailed Mann-Whitney U-Test). The number of FL postings shows that the medians (both 1.00) were not significantly different (U=64; P=0.98, two-tailed Mann-Whitney U-Test).

The science group’s tendency to produce a lower number of postings is counterbalanced by an average number of FL postings analogous to the one produced by the arts group. The greater writing tendency shown by the latter in respect to the former does not seem to ensure a higher proportion of FL.

In order to test this hypothesis further, the contribution patterns of postings with and without FL were analysed in relation to the background (see Table 6).

Table 6
Subgroup contribution patterns – comparison of FL postings in relation to academic background
Subgroups N of postings (and %) M and SD

<table>
<thead>
<tr>
<th>Subgroups</th>
<th>N of postings (and %)</th>
<th>M and SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with arts background who posted both with and without FL (n=18)</td>
<td>359 (86.71%)</td>
<td>M=19.94 SD=18.87</td>
</tr>
<tr>
<td>Students with arts background who posted without FL (n=7)</td>
<td>55 (13.29%)</td>
<td>M=7.86 SD=6.77</td>
</tr>
<tr>
<td><strong>TOTAL (n=25)</strong></td>
<td><strong>414 (100.00%)</strong></td>
<td><strong>M=16.56 SD=17.15</strong></td>
</tr>
<tr>
<td>Students with science background who posted both with and without FL (n=7)</td>
<td>83 (43.23%)</td>
<td>M=11.86 SD=10.19</td>
</tr>
<tr>
<td>Students with science background who posted without FL (n=17)</td>
<td>109 (56.77%)</td>
<td>M=6.41 SD=5.32</td>
</tr>
<tr>
<td><strong>TOTAL (n=24)</strong></td>
<td><strong>192 (100.00%)</strong></td>
<td><strong>M=8.00 SD=7.29</strong></td>
</tr>
</tbody>
</table>

The first thing to notice is that the number of science students who contributed with FL is considerably lower than the analogous subgroup of students coming from the arts background ($X^2=8.99$, df=1, $P<0.003$).

Results of linear regression analysis showed that there was no significant relationship between the number of total postings and the number of FL postings in the arts group ($F(1,16)=1.10$, $P=0.31$, with $\beta=0.04$, $t=1.05$, $P=0.31$), whereas a highly significant positive linear regression was found in the science group ($F(1,5)=70.57$, $P<0.001$, with $\beta=0.18$, $t=8.40$, $P<0.001$).

These results underline that though the arts group produced a high number of postings, their use of FL was not proportional. The science group however, despite the low production of postings, seems to have produced a number of figurative language postings analogous to the one produced by the arts group. In our study a higher production of postings did not imply an associated use of FL.

As to the distribution of FL occurrences between Identity and Context, the data are illustrated in Table 7.

Table 7
Comparison of occurrence contribution patterns per students’ background

<table>
<thead>
<tr>
<th>Students background</th>
<th>N of occurrences (and %) M and SD</th>
<th>N of occurrences (and %) M and SD</th>
<th>N of occurrences (and %) M and SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Identity</td>
<td>Context</td>
<td></td>
</tr>
<tr>
<td>Arts (n=18)</td>
<td>62 (78.48%)</td>
<td>39 (82.98%)</td>
<td>23 (71.88%)</td>
</tr>
<tr>
<td></td>
<td>M=3.44 SD=5.10</td>
<td>M=2.17 SD=3.55</td>
<td>M=1.28 SD=1.99</td>
</tr>
<tr>
<td>Science (n=7)</td>
<td>17 (21.52%)</td>
<td>8 (17.02%)</td>
<td>9 (28.13%)</td>
</tr>
<tr>
<td></td>
<td>M=2.43 SD=1.90</td>
<td>M=1.14 SD=1.35</td>
<td>M=1.29 SD=0.95</td>
</tr>
</tbody>
</table>
There were no significant differences between the two groups’ production of occurrences (medians were 1.50 and 2.00 respectively; U=66; P=0.88, two-tailed Mann-Whitney U-Test). As to different patterns of Identity and Context occurrences in the two groups, all medians are equal to 1.00 for Identity and for Context. In both cases significance tests revealed no difference: results of two-tailed Mann-Whitney U-Test were respectively U=72.5, P=0.57, and U=79, P=0.36. If we compare results of preferences for Identity and Context within the same group, they are not significantly different (arts group: W=38; P=0.20, two-tailed Wilcoxon signed rank test; science group: W=6.50; P=0.78, two-tailed Wilcoxon signed rank test). These results show that the contribution, in terms of type of occurrences used, is analogous in the two groups.

To sum up, no real difference was found investigating the relationship between students’ educational backgrounds (i.e., arts or science) and their tendency to use figurative language. This may be adopted by people with different educational backgrounds to express images related to Identity and Context.

5.3. Research question C: threads and figurative language

The aim of research question C was to analyse patterns of distribution of FL across postings and their organization in threads in the written discourse, in order to find meaningful relationships between expression of emotions and self-reflection and their position in the threaded and hierarchized discourse. Regarding position, postings were classified according to three typologies: “first posting of the thread”, that is the beginning of a thread or chain of postings; “reply”, if posted as a reply within a thread; and “unthreaded posting”, if it was not contained within a thread. In Table 8 the distribution patterns of postings with and without FL, per posting typology are shown.

Table 8

Pattern distributions between postings with and without FL per posting typology

<table>
<thead>
<tr>
<th>Posting typology</th>
<th>Postings without FL</th>
<th>Postings with FL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (and %)</td>
<td>N (and %)</td>
</tr>
<tr>
<td>First posting of a thread (n=144)</td>
<td>124 (16.38%)</td>
<td>20 (23.26%)</td>
</tr>
<tr>
<td>Reply (n=557)</td>
<td>508 (67.11%)</td>
<td>49 (56.98%)</td>
</tr>
<tr>
<td>Unthreaded posting (n=142)</td>
<td>125 (16.51%)</td>
<td>17 (19.77%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>757 (100.00%)</td>
<td>86 (100.00%)</td>
</tr>
</tbody>
</table>
The two distributions were not significantly different ($X^2 = 3.82$, df=2, P=0.15), both containing proportionally the same structure of posting typologies. We analysed the structure of the threads to identify different types of structure and their nature in terms of replies (i.e. containing FL or not). See Table 9.

Table 9
Pattern structure of threads

<table>
<thead>
<tr>
<th>Reply typology</th>
<th>Threads whose first posting did not contain FL</th>
<th>Threads whose first posting contained FL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N of replies (and %) M and SD</td>
<td>N of replies (and %) M and SD</td>
</tr>
<tr>
<td>Replies with FL</td>
<td>38 (8.07%) M=0.31 SD=0.79</td>
<td>11 (12.79%) M=0.55 SD=1.00</td>
</tr>
<tr>
<td>Replies without FL</td>
<td>433 (91.93%) M=3.49 SD=3.74</td>
<td>75 (87.21%) M=3.75 SD=4.52</td>
</tr>
<tr>
<td>TOTAL replies</td>
<td>471 (100.00%) M=3.80 SD=4.08</td>
<td>86 (100.00%) M=4.30 SD=5.13</td>
</tr>
</tbody>
</table>

The average length of threads (i.e. the number of replies) whose first posting contained FL was 4.30, while the length of threads whose first posting was without FL was 3.80. However, their medians (2.00 and 2.50) were not significantly different ($U=1254.5$; P=0.93, two-tailed Mann-Whitney $U$-Test), nor were the respective "FL densities" (i.e. the ratio between the overall number of postings and the number of FL postings), which were 0.09 for threads with a FL first posting, and 0.06 for threads with a non FL first posting (medians are both 0.00; $U=1349.5$; P=0.30, two-tailed Mann-Whitney $U$-Test).

No significant differences were found when analysing the distributions of occurrences (Table 10) ($X^2 = 2.81$, df=1, P=0.09): they are almost equally distributed between the two groups of threads. If we compare medians of total occurrences of Identity and Context in the two types of threads (both 0.00), the results are not significantly different ($U=1100$; P=0.26, two-tailed Mann-Whitney $U$-Test), which means that FL occurrences are statistically equally distributed between the two types of threads with no kind of preferred setting.

Table 10
Distributions of occurrence typologies between the different types of threads
Occurrence typology | Threads whose first posting did not contain FL | Threads whose first posting contained FL
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N of occurrences</td>
<td>M and SD</td>
</tr>
<tr>
<td>Identity</td>
<td>17</td>
<td>M=0.14 SD=0.39</td>
</tr>
<tr>
<td>Context</td>
<td>23</td>
<td>M=0.19 SD=0.56</td>
</tr>
<tr>
<td>TOTAL</td>
<td>40</td>
<td>M=0.16 SD=0.48</td>
</tr>
</tbody>
</table>

Occurrences of Identity in the two types of threads were found to be significantly different (U=1008; P<0.05, two-tailed Mann-Whitney U-Test), concentrated more in the threads with first FL postings. Occurrences of Context were statistically equally distributed between the two types of threads (U=1221; P=0.86, two-tailed Mann-Whitney U-Test).

In short, there was no real evidence that FL expressed in the first posting of the thread encouraged the production of further FL, as data demonstrate that FL postings were equally distributed in the two kinds of threads.

6. Discussion

Although care must be taken in generalizing on these data, due to population size and problems connected with textual analysis, the results suggest that high written discourse production seems to encourage the occasional use of figurative language. However, it does not ensure nor does it increase its chance of occurrence. Using language in a creative way to manifest personal emotions and feelings seems to be largely a matter of personal disposition. This hypothesis was partially confirmed through the investigation of the relationship between students’ educational backgrounds (i.e., arts or science) and the respective tendency to use figurative language. No real difference was found, except for an inferior percentage of the science group using figurative language. Nevertheless, no real difference in the means of group production was observed. There is no doubt that figurative language is an effective means of communication and expression of social presence for people from all academic backgrounds. Further studies are needed in order to understand how figurative language production in CMC learning contexts is cross-culturally biased and how individual attitude in using figurative language might be related to other individual attitudes such as cognitive and learning styles.

Results also indicated that people tend to use figurative language more when meaningful or critical events happen. The higher the emotional involvement is, the more feelings of anger, frustration, pride or satisfaction are expressed by metaphorical or figurative language, as an elective means by which to express oneself in a
more indirect, yet very intimate way. In our context this was especially true. As a matter of fact, at these moments, people undoubtedly preferred to use figures of identity.

Further results show that the use of figurative language was spread throughout the written threaded discourse. It was not concentrated in a specific kind of posting or thread neither did it encourage further use of figurative language itself. It served individual and personal needs for social, emotional and conceptual expression, with no assurance that it would generate further figurative language in the replies. This might be further confirmation of the fact that what really matters are individual preferences in the use of language.

7. Conclusions and future directions

For our students figurative language was a resource, among others, to create the new learning and social reality in which they were involved. For most of them it was their first online learning experience and they had to face several new problems including learning to communicate by written discourse in an asynchronous manner, becoming familiar with communication technologies, as well as learning and collaborating in group. Metaphors and figurative language were used to understand a new domain of experience in terms of what was already familiar to them (e.g. images of movement for learning rhythms).

A major aspect of figurative language in the context of online learning, based on the approach of collaborative learning and of social construction of knowledge, is that metaphors and analogies (figurative language, by extension) are the elective means with which to explicate and conceptualize tacit knowledge into knowledge shared among the group. Personal knowledge is embedded in individual experience and involves intangible factors such as personal beliefs, perspectives, as well as the value system: it must be socialized and transformed, through close interaction and collaboration within a group, into explicit knowledge in order to become group knowledge (Nonaka and Takeuchi, 1995).

Computer-mediated communications discourse analysis (Herring, 2004), based on structural and semantic content analysis, has been establishing itself as an alternative to other approaches to social presence and group identity measures. Classifications of text features into categories and indicators have been proposed (e.g. Rourke at al., 1999; Job-Sluder & Barab, 2004), with the aim of capturing the new styles and characteristics of human communication which rely on asynchronous written discourse, which is profoundly different from traditional written and oral modes of speech. We suggest that the use of figurative language (expressed by metaphors, analogies, or any new creative use of language) should be taken as a textual indicator of social presence in web-based learning environments, and as a detector of emotions and feelings involved in an online learning experience. Rather than comparing face-to-face and online settings and seeing the latter as characterized by an impoverished communication, researchers should also study how the
pragmatic needs of an online setting might be satisfied by the richness of written language, in terms of linguistic and stylistic inventions.

The use of figurative language could also be adopted during the design and conduction phases of an online learning course, as a stimulus to manifest and share those personal emotions and feelings always deeply involved in any new learning experience. The few examples provided by the literature (De Simone et al. 2001; Yeoman, 1995) seem to support the idea that the adoption of metaphors by tutors, for instance, can foster students’ sense of belonging to a larger community and provide a framework for role assignment, identity, and responsibility. Together with other facilitation measures, tutors would be able to use a further feature aimed at encouraging interaction based on figurative language.

The analysis of metaphor and figurative language has profound implications in understanding learning processes as well. Roschelle (1996) underlines that “traditional aspects of the analysis of individual conceptual change have been reinterpreted as simultaneously cognitive and social” (p. 243). From this perspective, convergent conceptual change is only possible starting from “figurative, ambiguous, and imprecise language” (p. 212). One of the future directions could be to investigate how fruitful contamination between the social and cognitive spheres may occur through the analysis of figurative language production. The conceptual and experiential transaction between the two domains could be facilitated and expressed by figurative language, which could assure new metaphorical mappings between different contexts of meaning. The procedure of giving mental processes tangibility and concreteness may be facilitated just by metaphors and figurative language. An interesting research task could be to find suitable ways of investigating how this contamination occurs.

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