

Online Learning Communities in the Realm of Complexity

JUNIA DE CARVALHO FIDELIS BRAGA

Universidade Federal de Minas Gerais, Brazil

The increasing demand for online courses has led researchers and educators to seek to understand pedagogical resources that can foster the development of the process of learning. Creating online learning communities has been recognized in the field of Distance Education as a pedagogical intervention capable of embracing course designs that take into account negotiation and collaboration, core elements of a meaningful educational experience.

Based on the principles of Complexity Theory, learning communities and the Community Inquiry Framework (Garrison et al., 2000), this study aims to discuss the main characteristics and functions of online learning communities as well as the development of learner critical reflection and autonomy in this context. As this is still an empirical work in progress, the discussions presented herein will focus on some patterns that emerged from the interactions of students who participated in a teacher development course offered by the School of Languages and Literature at Universidade Federal de Minas Gerais, Brazil.

Complexity: a bird's eye-view

At first glance, complexity is a phenomenon that encompasses a great number of interactions and interference among a vast number of agents. However, complexity is not solely about the number of agents and interactions which challenge even the possibilities of calculations. For Morin (1990), complexity effectively includes the interweaving of events, actions, interactions, retroactions, determinations and random events that constitute our world, full of phenomena.

Insofar as science is concerned, complexity is still a new and vast field without an exact definition nor palpable limits. Complexity has its place in science due to research which has attempted to explain questions which challenge all conventional categories (Waldrop, 1992). Questions posed by Waldrop (1992) include:

- Why did the Soviet Union's political hegemony collapse in 1989? Why was the collapse so quick and so complete?
- Why did the stock market crash more than 500 points on a single Monday in October 1997? Many blame computerized trading. But the computers had been around for years.

Proceedings of the 2007 Complexity Science and Educational Research Conference

Feb 18–20 • Vancouver, British Columbia • pp. 139–144 • www.complexityandeducation.ca

Was there specific reason behind the crash on that specific day?

- Why do ancient species and ecosystems remain stable in a fossil state for millions of years?

According to Waldrop (1992), at first glance the aforementioned questions lead to the same answer: 'nobody knows'. Some of these questions do not even seem to be scientific. However, upon closer examination, they in fact have much in common. All of them refer to a system which is complex if we consider that many of the independent agents interact with one another in diverse manners. As Waldrop (1992, p.11) explains, in each example "the very richness of these interactions allows a system as a whole to undergo spontaneous self-organization".

Inspired by Cameron (1992), Finch (2001), Larsen-Freeman (1997, 2000), Paiva (2002), Parreiras (2005), and van Lier (1996) in the area of Applied Linguistics, I would be so bold as to add the following challenge to the list of questions proposed by Waldrop (1992):

- Why is it so difficult to predict results regarding learning in a face-to-face or virtual environment where students are apparently exposed to the same conditions, such as teacher, institution, social level, materials, technical resources, pedagogical approaches, etc?

The fundamental concepts that have so far been the cornerstone of the classic conception of the world have now reached their point of exhaustion. Those concepts, which reduce a set of natural processes to a small number of laws, have been abandoned. No longer are stability and permanences the only interest, but rather evolutions, crises and instabilities. Researchers of natural sciences are as interested in studying what is permanent as they are in investigating everchanging geological, and climate disturbances as well as the evolution of species, of genesis and the mutations of norms that interfere with social behaviors (Prigogine, 1984).

Much can be learned by tearing apart a certain piece of equipment in order to understand how each part works. Not everything, though, can be examined in this reductionist light. To paraphrase MacGill (2005), by dissecting a guinea pig one can learn a great deal about its parts. Yet, dissecting it implies killing it, which prevents one from learning what gives it life. Oftentimes, it is necessary to take a stand that contemplates the dynamism of the whole in order to better understand how its parts work and what the interactions among them can bring about.

Why learning communities?

Cross (1998) advocates that the interest for learning communities is related to three comprehensive categories that involve the following aspects::

- Philosophical: the principles of learning communities presuppose that we build knowledge through negotiation and not merely by examining the world.
- Theoretical: the notion of learning communities is directly linked to collaborative learning.
- Pragmatics: learning communities are inserted in educational contexts such as communities of practice, internships, etc.

Based on a compilation of principles found in the literature on learning communities in the educational context in both virtual or brick-and-mortar and the virtual environment (Cross, 1998; Harasim et al, 2005; Kilpatrick et al, 2003; Lévy, 1994; Palloff & Pratt 1999; Paiva, 2004; Wenger, 1998) a learning community online is made up of a group of people in collaborative learning process, immerse in situ-

ated contexts, connected to cyberspace by the world wide web and mediated by language and cultural artifacts. The members of a online learning community share values, common interests, practices, beliefs, meanings, common purposes. Besides promoting individual and collective construction of knowledge, online learning communities respect diversities, perspectives, values, opinions, beliefs, learning styles and strategies, and levels of autonomy in addition to expanding the potential of participants, educators, teachers, learners, citizens, professionals, etc.

The context of the reseach

Two classes consisting of 50 pre-service teachers in the field of second language teaching and learning were each named respectively UFMGPRAT and PRATUFMG. Despite following the same course content and procedures, these two groups had distinct interactional environments and were subdivided into subgroups of 3 to 6 students. The students were divided in subcommunities according to their majors: English, Spanish or Portuguese and were encouraged to open a discussion list for task discussion.

The course design relied on a carafull elaborate site with links to interactional environments such as: course management discussion lists, forums for task discussions as well as links to pages with information about the content of the course, names of participants, tasks and evaluation procedures.

A triggering procedure for task discussions included individual and collective contributions. The individual work posted in the subcommunities served as a

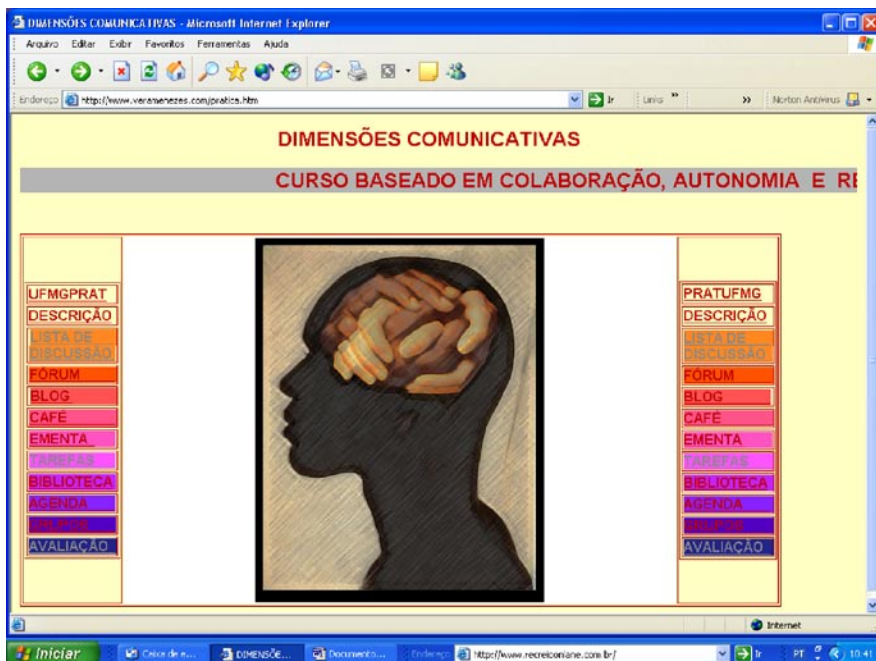


FIGURE 1. Basic organization of the course Communicative Dimensions
(Reproduced with permission of Prof.Dr. Vera Menezes de Oliveira e Paiva)

discussion starting point as well as input to the consolidation of a collective task they were to post in a forum for feedback from the teacher and from members of other communities.

Emergence: local, global and contextual dynamics

Over the life of a complex system, three levels of dynamics shape it continuously, namely: local, global and contextual dynamics.(Arrow et al,2000). Such dynamics are imbued with the properties of adaptive complex systems, working in synergy therewith and with the systems agents. The system is a living one and is constantly learning, as is the case of online learning communities.

One aspect regarding the emergence of patterns in the subcommunities investigated concerns *distributed leadership*, i.e. not centered around one leader only. Oftentimes, a student would suggest an alternation of leaders (local dynamics), one or two other students would back up the idea and the group would naturally take on new conditions of the community and would thus, generate distribution of leadership (global patterns or emergence). The subsequent interactions depict the groups' changes in behavior which stemmed from the local interactions of its agents.

One of the members of a subcommunity, PRATUFMG English-1, puts forward an alternation of leaders in the group. Adhesion to this classmate's idea sets a *new status quo* in this subcommunity:

I feel we need to talk a bit more about our group. How would you guys feel about each of us taking turns at leading the group, so that each week one of us is in charge of consolidation and sending the task? Not that I'm not happy with our situational leader, 'F'. On the contrary, 'F' you have played a brilliant role in the group. I just think that it would be fairer to us all. (Translation of original message in Portuguese PRATUFMG- English-2,msg # 33)

The same can be observed in relation to the deadlines within each one is to submit their individual contributions. On the whole, a member would put forward a new rule to the subcommunity, second member would agree to it, exchange ideas on the proposal and the group would start acting in conformity to the new rule agreed on.

I found 'L's' idea so cool – Let's do our part within the deadlines she set. (Translation original message in Portuguese-PRATUFMG-English-1-1,msg # 30)

I really loved the Idea, 'cause if all of us (or most of us) post our individual tasks to the leader in advance, he will have more time to reflect on it and come up with a more elaborate and thorough text! (Translation of original message in Portuguese- UFMG-PRAT-English -1, msg #57)

Both alternation of leaders and the deadline for posting individual contributions were *norms* established by the subcommunities and were found in most of the online learning communities.

Another event also found, *divergence or conflict* is imbued with local behaviors that generate turbulence capable of promoting the emergence of a new state in the community. That type of event was detected in a great number of learning communities.

The subcommunity called UFMGPRAT-English-3, for instance, went through several tense moments in carrying out task 11, apparently brought on by tardiness in the posting of individual contributions.Difficulty in overcoming such a conflict led to discontent among participants and the loss of one of the members of the subcommunity.

The subsequent interactions depict part of the conflict experienced by members of UFMGPRAT-English 3 when carrying out task 11.

'L', one of the members of the group was abroad at the time and manifested his feelings about the task to be developed:

Guys I am worried. Our assignment is still far from be ready and we have to hand it in tomorrow, at the latest. 'C' and 'F', where are you? 'H', your activity is missing some parts. (Original message in English- UFMGPRAT-Ingês-3, msg #126)

'Le's' message in reply to 'L' mentions lack of collaboration on the part of some members and shows his intention to develop the task regardless of his classmates:

'L', the unit must be finished by tonight if I'm to print and hand it in tomorrow. If 'C' and 'F' don't send anything, it's too bad. It's 20 marks and I don't want to lose them. Connect what you got so far and let's move on. It's 3:20 here, you said you'll have some time at four. I'll be at work and will print the assignment at night. See ya 'Le'. (Original message in English -UFMGPRAT-Ingês-3, msg #127)

'Le' claims for better organization on the part of the subcommunity's members.

'H', what do you mean by "meeting"? We are supposed to hand the task in tomorrow! There are two activities about disability (is one of them yours?). Why don't we all go the same way? Read them and send the rest of the contributions ASAP See ya, 'Le' (Original message in English -UFMGPRAT-Ingês-3, msg #128)

'H' replies to his classmates' complaints:

Well, someone had suggested meeting to get all going in the same direction. I was just reminding everyone of the idea. Now all this panic about handing in things are OK, guys but I remind you ALL that I handed my "suggestion" a LONG time ago and got very few comments on it till last week. I leave NOTHING to the last minute (Original message in English -UFMGPRAT-Ingês-3, msg #135).

'Le' announces posting of the tasks, in clear reference to the contributions received. Dissatisfaction with the conclusion of task 11 can be seen in the excerpts. As a result, 'L' left the group.

'F' e 'C', we have already handed the paper in. you should talk to 'V' about it. 'H', you sent work sheet B too late to be included. i guess you left it to the last minute, but your name and activity were included. i prepared something to be done with the text you send. when 'V' sends the feedback we may use sheet B. (Original message in English -UFMGPRAT-Ingês-3, msg #143)

I agree with 'H' when he says that this is supposed to be a group work. But it is Ok. Me and 'C' will do it by ourselves, 'F'. (Original message in English-UFMGPRAT-Ingês-3, msg #146)

Both local dynamics and global dynamics are influenced by contextual dynamics. Thus, factors such as: satisfaction, dissatisfaction, and the several tensions that boosted local actions are present in both local and global patterns. Another relevant point is that distributed leadership, norms and conflicts are patterns that emerged in several scales: subcommunities with different numbers of members (3, 4, 5, 6 students), which display fractal property in online learning communities.

As the issues presented involve both theoretical issues and practical pedagogical implications, I hope the final outcome of this research will contribute to the collaborative learning experience in the context of Distance Education.

References

- Arrow, J., MacGrath, H., & Berdahl, J. (2000). *Groups as complex systems: Formation, coordination, development, and adaptation*. London: Sage.
- Cameron, L. (1999). The complex dynamics of language use on tasks. Available [online]: http://www.education.leeds.ac.uk/research/ljc_complang.pdf.
- Cross, K. P. (1998) *Why Learning Communities? Why Now?* Available [online]: <http://www.doso.wayne.edu/SASS/Tinto%20Articles/Why%20Learning%20Communities.pdf>.
- Curtis, D., & Lawson, M. (2001). Exploring collaborative online learning. *JALN* 5(1). Available [online]: http://www.puc.cl/citeduc/datos/archivos/collaborative_online_learning.pdf.
- Davis, B., & Sumara, D. (2006). *Complexity and education: Inquiries into learning, teaching, and research*. NJ: Erlbaum.
- Demo, P. (2002). *Complexidade e Aprendizagem: A Dinâmica não linear do conhecimento*. São Paulo: Atlas.
- Dornyei, Z., & Murphy, T. (2003). *Group dynamics in the language classroom*. Cambridge: Cambridge University Press.
- Finch, A. (2001). *Complexity in the language classroom*. Available [online]: <http://www.finch-park.com/arts/complex/index.htm>.
- Fisher, K., Phels, R., & Ellis, A. (2000). Group processes on-line: teaching collaboration through collaborative processes. *Education, Technology & Society* 3(3). Available [online]: http://ifets.ieee.org/periodical/vol_3_200/f06.html.
- Garrison, R., Anderson, T., & Archer, W. (2000). *Critical inquiry in a text-based environment: Computer conferencing in higher education*. *The internet and higher education* 2(2-3): 87-105.
- Harrisim, L., Teles, L., Turroff, M., & Hitz, S. (2005). *Redes de Aprendizagem: Um guia para ensino e aprendizagem*. São Paulo: Editora Senac.
- Kilpatrick, S., Barrett, M., & Jones, T. (2003). *Defining learning communities*. Available [online]: <http://www.crlra.utas.edu.au/files/discussion/2003/D1-2003.pdf>.
- Larsen-Freeman, D. (1997). Chaos/complexity science and second language acquisition. *Applied Linguistics* 18(2): 141-165.
- Lévy, P. (1994) *Cyberculture and education*. Available [online]: <http://www.infoage.ontonet.be/levye>.
- Lévy, P. (2003). *A inteligência coletiva: por uma antropologia do ciberespaço.4*. São Paulo: Loyola.
- Morin, E. (1990) *Introdução ao Pensamento Complexo*. Lisboa, Instituto Piaget.
- Paiva, V. L. M. de O. (2002). *Caleidoscópio: fractais de uma oficina de ensino aprendizagem*. Memorial apresentado para concurso de Professor Titular na Faculdade de Letras da Universidade Federal de Minas Gerais.
- Paiva, V.L.M. de O. (2004). *Comunidades virtuais de aprendizagem e colaboração*. Trabalho apresentado no X SILEL - X Simpósio Nacional de Letras e Linguística, Available [online]: <http://www.veramenezes.com/textos.htm>.
- Palloff, R., & Pratt, K. (1999). *Building learning communities in cyberspace: effective strategies for the online classroom*. San Francisco: Jossey-Bass.
- Parreiras, V.A. (2005). *A sala de aula digital sob a perspectiva dos sistemas complexos: uma abordagem qualitativa*. Tese de Doutorado em Linguística Aplicada-Faculdade de Letras, UFMG, Belo Horizonte.
- Prigogine, I., & Stengers, I. (1984). *A Nova Aliança: A Metamorfose da Ciência*. Brasília: Editora Universidade de Brasília.
- van Lier, L. (1996). *Interaction in the language curriculum: awareness, autonomy & authenticity*. London: Longman.
- Waldrop, M.M. (1992). *Complexity: the emerging science at the edge of order and chaos*. New York: Touchstone.
- Wenger, E. (1998). *Communities of practice: learning, meaning and identity*. Cambridge, UK: Cambridge University Press.