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# ON LINE INTERACTIONS AND LEARNING ECOSYSTEMS. A COMPLEX LEARNING EXPERIENCE

*Laura Vettraino, Eleonora Guglielma, Learning Community, Giovanni Sorrentino, Dida Network srl, Valentina Castello, L'Aquila University, Dida Network srl, Marco Guspini, Educommunity, Italy*

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## Abstract

Learning and sustainability is addressed in this paper from three diverse, and intertwined, perspectives at the individual, organisational and societal levels: inclusiveness, complexity, virtual collaboration in ubiquitous and open learning scenarios. The' underpinning are reflections and experiences on complex relationships among organisms and networks (and among them and relevant environments) in collaborative learning virtual spaces. We first briefly recall the main framework addressing individual, and collective learning processes and their dynamic, complex (organic) relationships. Then, we deepen the complex learning frame. Finally, we present the main evidences emerging from the experience of LLLP' Deeper project, realising a complex learning environment ("ecosystem") for refugees trainers, valorising collaborative (and connective) learning and facilitating interactions within the community and with its relevant external environment.

## 1. Introduction

As humans are continually developing socially, they keep learning throughout entire lives through: formal, non-formal and informal processes; cognitive, experiential and emotional dimensions; very diverse patterns; individually and socially based contents, places and contexts. PLE, social based and informal learning, eLearning 2.0, connective and adaptive learning represent innovative approaches (to some extents still experimental) building a new learning culture and processes. Learning is interactive, non-linear and informal [1].

The use of social networks is becoming increasingly relevant for the number of users and for the quality of available tools. Individuals are increasingly learning to learn, putting themselves in a more centred position within the learning processes. Individual-centred learning processes and systems have been shown to motivate, engage and inspire learners. The main research question is referred to *how* the use of emerging connective technologies create new value for learning [1,5] at the individual, organisational and societal levels.

What learners (individually and collectively) need is to access *authentic* and *living* learning communities in which learners, institutions and all relevant actors can construct and share knowledge, competences, value; can build and valorise shared identities allowing a continuous change and external environment stimuli governance. According a growing awareness of learning environment as a living organisms where processes occur through components interactions, changing dynamically the same ecosystem. The questions are: Who are the relevant "actors"? In other words: Who can be considered as internal to the ecosystem? what are the boundaries? what are the limits that the ecosystem imposes to those who take part in it? what are the possibilities it offers? How can manage a system based on the complexity of interactions?

The only possible answer to those questions is a dynamic and adaptive process strictly related to the aims of the learning paths. *Complex Learning Model* will be analyzed in order to give a concrete example of that dynamic process. For this reason in this paper we would illustrate the virtual community of Deeper project, involving diverse actors (and networks): institutions, associations and individuals working in the refugees and asylum seekers system and who need to interact, socialize and build knowledge, competences and shared value. Deeper learning processes are intended: to be strongly inclusive; to valorise contemporarily the community identity definition and its openness to the relevant external environment (targets; institutions; society; and so on); to valorise the organic relationship among formal and informal individual and group/organisational learning[2, 5].

## 2. From individual to social learning processes and ecosystems

Literature on individual and organisational learning is quite vast. Indeed, it appears that there is a need to further focus the *processes* themselves of *how* individual, organisations and systems learn and grow, and *how* they identify and develop their resources and competence over time [3,5,7]. This means investigating how accessing, using, building and sharing knowledge, competences and values through complex cognitive, behavioural and emotive formal and informal learning processes. This also means deepen other two intertwined research areas: the dynamic link among these processes at individual, group and collective levels; the role of technology in enhancing those processes and their relationships.

The relationship among the diverse levels of learning is complex, open, organic. Individual formal and informal learning processes are embedded in wider learning ecosystems, interacting and exchanging content, resources, *meanings* [3,5,7]. Assuming a systemic and organic (also in terms of the biological metaphor of organisations) view of the organisational development [7], the key variables governing the relationships among learning levels (and, basically of individual participation in meaningfully accessing, sharing and building knowledge and values) are engagement, utility, ubiquity, connectivity. Inclusiveness, openness, embeddness also represent the dimensions of the *organic technology* enhancement of individual, collective and societal learning processes, not limited to knowledge collection and distribution but referred to the continuous and *significant* building and socialisation of competences, values, networks.

Radical processes of change, linked to technological evolution, have had a central role in determining new and fascinating interdisciplinary research areas [5]. Networking tools and platforms have the potential to enable individuals to enhance their social networking, and in this way, potentially also enhance their learning. According to Siemens connective perspective learning is network creation and the knowledge is a particular configuration (probably temporary) of nodes and connections (a sub-network)[21]. Learn about creating new connections between existing nodes (change in knowledge exists) or create new nodes (new knowledge)[1]. Thus, the key enhancer of *sustainable* development (in terms of both inclusiveness and innovation) of individual and societal *organisms* are: lifelong learning and ICT. Consequently, understanding *how eLearning enables Lifelong Learning and how eLearning relates to innovation* represent the main issues [6].

The combination of media convergence and intermodality can supports the creation of semantically and socially enriched content through the use of simple interfaces that allow content experts as well as novices, participants and teachers to share knowledge and experiences. On the methodological dimension, this calls for far beyond the simple integration of technological channels to the integration of *organic* educational patterns diversified in terms of actors, content and aims. In order to fulfil the ultimate goal of ubiquitous access and *build* of learning, a wide range of utility, inclusivity and connectivity factors are crucial [1, 3, 5]. In this way, learning environments can be featured as embedded and open ecosystems, living structures that are developed, discussed and managed by committed communities and where the critical success factor is the active (and meaningful) engagement of users that access, share and builds knowledge, competences, values and, so, identities in a continuous interaction within the community and the external relevant environments [1, 3]. In this framework of *liquid complexity* we need to rethink old pedagogic models and learning environments, not as structured and *packed* places, but as distributed (and social constructed) processes and ecosystems.

## 3. Complex Learning Approach and Evidences

### 3.1 The Complex Learning Main framework

New learning models are addressing the complexity paradigm, conceiving the learning environment as a flexible space; one innovative model able to meet this challenge is Complex Learning: it exactly answers to the challenge of the "eco-design of learning spaces" including and valorising the whole web in the ecosystem of learning. Under this term we can recognize various visions and interpretations, referring to common principles but realizing practices in different ways [9, 10, 13, 15, 16, 17,23]. We intend Complex Learning as an approach where learning space is composed by multiple components (communication means and tools, codes, languages, training aids, resources) that are in an interactive and complementary relation; a social and cultural space where learner moves, explores, draws on the surrounding opportunities to create own experience, adapting the acquired knowledge to previous representations.

Complex Learning is a blended model in a wider sense: it not only integrates face-to-face and distance, but also expands this perspective enriching it with a multiplicity of actors, resources, communication forms and means, where the result is bigger than the sum of its components. [9; 11] Different e-learning typologies, new languages and new interaction modalities are in a continuous reconfiguration, and therefore in "remediation" [12]. In Complex Learning the term "complex" refers to the problematic nature of reality and, consequently, of knowledge: according to complexity and chaos theories, human cognition can be viewed as a complex system, that interacts with its environment and can be modified by it. Traditional learning approaches can't adequately address the complex and multi-dimensional nature of cognition. [14; 15].

Complexity in education designates an open, dynamic and flexible system, constantly self-generating and self-organizing. It means that the learning outcomes are unpredictable a priori. It's impossible to predict trajectories in learning processes or precise responses to specific stimulus according to theoretical predictions. Complex Learning reflects the complexity of reality without need to simplify it; the learner can take hold of it and live from its inside, through the strengthening of self-directed learning and critical thinking competences, that makes him no more a passive user but a creative, reflexive and conscious co-designer, able to move in the liquid continuum of the age of knowledge. The learning process is connoted by non-linearity, holism and serendipity, in which the social, collective and connective dimension represents a vital factor. [10].

Foundations and practices of the education should be reconsidered in order to support learning processes that take place in liquid contexts that are increasingly assuming a ubiquitous character on temporal, spatial and cultural levels [18]. According to the concept that reality is chaotic, problematic, fluid and organic, new pedagogic visions are connoted by the distinctive feature of ubiquity, taking place in liquid contexts, where the learner must manage his personal self-realization and his own social being. Complex Learning model conceptualizes and analyzes the changing nature of learning, empowering participation in the sustainable Complex Learning Communities of the future.

### ***3.2 Complex Learning environment***

A Complex Learning Environment is built through different typologies of media and technologies: books, e-books, computers, electronic blackboards, palms, mobile phones, mp3 players and other devices. In the learning space is possible to use in an integrated way communication and interaction tools like forum, e-mail, instant messaging, chat, wiki, blogs; the social dimension represented by virtual communities and social networks allows to "live" the web building relations with its inhabitants. The virtual non-places are in a constant overlapping to the real places. The learning environment is flexible and ubiquitous; learner builds a personalized space using the web tools and resources for research of information, communication, publishing, collaborating, and acting also in the communities of experts. The whole web is the learning space were learning objects and knowledge are constantly used, re-used, produced.

According to the concept of ubiquitous learning, [19] the learning process is no more developed on the e-learning standardized and packed platform (the learning management system), or within the classroom's boundaries, both limited to static functions, predisposed by someone other, and impossible to be modified by the learner. In Complex Learning the course goes out of the learning platform's boundaries: a complex learning environment is open, dynamic, flexible, informal. The learning process takes place in a redundant and cyclic way, passing across multiple editions of the same learning topic: knowledge is elaborated from time to time, in different way, through different codes and languages.

In the complex learning environment informal and non-formal learning are valorized in a holistic vision; the learner customizes his space according to his needs. The result is an hybrid place, characterized by the interaction of multiple actors, the digital integration of different codes, the openness to creativity; all these features contribute to build a shared knowledge and to realize "learnativities", activities aiming to realize a learning in action, situated, authentic and collaborative based.

The first change learners, teachers and tutors have to face is a mental attitude change and a radical transformation in the teaching culture. The typical behaviour in students is to be "consumers": they expect to make a receptive use of ready lessons, resources and training aids; teachers and tutors are bound to a teaching approach based on a transmissive model and on the fixed roles. In Complex Learning the subjects' role changes, it's not fixed once and for all: everyone can express his competence and his tutorship in relation to his expertise.

Learner interacts not only with his peers and with the course staff, but also with domain experts, key actors, stakeholders, individuals and communities sharing his interests at both formal and informal level. The learning space is a composite environment where develops the Complex Learning community [9]; inside these community it is possible to implement a meaningful learning, intended as situated learning.

According to the transactional perspective in a Deweyan sense we can underline the inseparability between the individual and the social dimension in building of new meanings [20]. In this perspective we find critical think as a holistic activity, including reflexive and shared actions, and self-directed learning as an emerging conceptual and social model.

The common habit is to live the learning experience in a “protected” space – the learning platform – moving in a structured learning environment and regarding knowledge as an individual property rather than a collective and connective asset. In Complex Learning, on the contrary, learner is a co-designer: he must not only repeat and apply predefined knowledge, but he has to discover, re-build, co-build learning. The co-designing is a collective and social co-designing.

Therefore it is necessary to develop a new repertory of competencies to afford the learning experience: meta-cognitive competencies (e.g. self-evaluation, self-assessment, self-guidance, attitude to research, problem setting and problem solving ability), collaborative competencies, ability to dialogue through many-to-many communication models, attitude to recognize that an outcome is always the starting point of a new learning experience.

### ***3.3 Evidences from the DEEPER Community***

The described Complex Learning Model is now applying within the DEEPER project involving people and communities operating with Refugees and Asylum seekers in order to implement and develop a permanent network of dialog and peer learning among operators working in really different systems, representing as many referential environments. The project aims to make of the complexity the strength point to afford the complexity of the Training Refugees System [4].

The Complex DEEPER Community is indeed the result of interaction of groups of actors operating in Training Refugees' System at different levels, in different Countries, with different roles. The TRAINERS DEEPER Community, generally speaking involve actors as follows:

- Stakeholders: who promotes the creation and development of the Community and acts as hidden animators of the community, under the guide of the Complex tutors
- Complex Tutors: complex learning processes experts who implement the effective strategies in order to create and animate the complex learning processes and to support the development of the complex community
- Members of the community: participants sharing a common aim and common problems
- Experts: people not directly involved in the Community but having resources of knowledge and solutions to share with the core members of the Community
- Members of other communities: member of other pre-existing communities having similar or transversal aims and problems.

As specifically concerns DEEPER project: the stakeholders are members of the DEEPER partnership; the *complex tutors* are the researchers; the expert of the model; members of the Community are the operators dealing with refuges and asylum seekers; experts indirectly involved in the community are, for example, all the participants to the Focus Groups, or other people identified during the research about status artis and best practices; members of other communities are for example the participants to the networks of Ciré, INCOMA, Junta de Andalucia, ECRE, Rete di scuole dei migranti, etc. The members of the DEEPER partnership constitute the core of the DEEPER Complex Community.

Actually complex learning is time expensive: three year at least are requested to develop the community and to ensure the stable interaction among the different levels of the Complex Community. Moreover it requires a radical change of attitudes and of roles expectations by learners and trainers, joint to the development of meta-cognitive competences.

Thanks to DEEPER project it is possible to reinforce the experience of Complex Learning, experimenting an innovative model of continuous education of trainers and operators dealing with refugees and asylum seekers. In this perspective DEEPER could represent a good example for future projects of continuous and vocational training fostering the adoption of more flexible and technology enhanced learning models and pathways. DEEPER project experience contemporarily contributes to build a common framework of sustainable (inclusive and innovative) learning ecosystems and opens new research areas related to the need of defining new *structural philosophies* and pedagogic models and a 'societal learning' agenda for technology enhanced learning, implying a radical and innovative approach across all learning sectors [23].

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