Collaborative platforms and e-learning environments

***Author*: José Figueiredo**

Escrita Digital &
Instituto Superior Técnico
Engineering and Management Science Department

Address:
Escrita Digital
Rua Castilho, nº 39, 10º F
1250-068 LISBOA

Phone: +351.21.381 1710
Fax: +351.21.381 1716
Email: jose.figueiredo@escritadigital.pt

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Abstract

Being knowledge, learning, behavior within change environments, collaborative practices and management styles, aspects that strongly depend on cultural patterns, we stress that Information Systems analysis and conception, as well as conviviality between people and technology in organizations, must be embraced in a centric approach. By centric we mean a positioning and a style of leadership and management in an inclusive way, and we mean a socio-technical approach in which technology artifacts (equipment and routines) are considered as actors like human beings. Collaborative work practices and a technological infrastructure that facilitates a dynamic interaction between different people, people acting targeting a same goal, people that participates in the design of processes, represents an avenue to explore new socio-technical paradigms. Organizational paradigms, behavior paradigms and technology aligning paradigms, are elements we explore in a new approach we try to explore and nourish.

> "*Every new idea – a business startup, a new product, an internal process change – runs into trouble before it reaches fruition. … So, stay with it trough the bumpy times, provide appropriate adjustments, and you will be in the way of success.*"
>
> Rosabeth Moss Kanter, Business 2.0

1. New paradigms

Organizations have to reconfigure, focusing on integrating processes and functions and using organic patterns. Organizations need to promote inclusion, need to open multiple lines of communication. Managers should insert themselves centripetally, they need to practice the inclusion of more and more people in the organizational actor community. That is the way a good leadership evolves, the way the organization learn. Key actor must participate and include the decision process in a new open pear attitude.

> "*The architect of the web works as the spider does, by ceaselessly spinning new tendrils of connection, while also continually strengthening those that already exist. The architect tools are not force, not the ability to issue commands, but rather provide access and engage in constant dialogue. Such architect recognizes that the periphery and the center are interdependent…like in a spider's web structures are continually being built up, stretched, altered, modified and transformed.*" (Helgesen, 1995)

> "*In life, the issue is not control, but dynamic connectedness…*" (Wheatley, 1992)

This attitude entails both a pattern of behavior and a process, meaning that it models a coherent way of organizing people and their tasks, as it facilitates and promotes a way of thinking and acting in a more integrated fashion.

This reconfiguration requires a more holistic view. Societies, as human beings, are bounded and immerged in technology, as technology is bounded by humans, that is, technology and human individuals are both constrained and animated by each other. This increasingly mutual constriction and animation between humans and technological artifacts imposes a more organic kind of conceptuality defining the contextual structure. A structure that must be able to adjust during and trough *actions*, *processes* and *change*, "*the classical mechanistic world view had to be abandoned at the beginning of this century when quantum theory and relativity theory forced us to adopt a much more subtle, holistic and organic view of nature*" (Capra, 1975).

In fast changing ambiences you need to plan in the process of action, continually modifying and adapting previous drafts (if they exist) as things are going and being done. Integrating both conception and execution is an essential attitude to adapt aim and goal. To learn and adapt action accordingly is something that is these days more and more required. This is not a novelty, the roots of this way of thinking are deeply based in ancient oriental philosophies ("*Taoism, the way of correspondence between man and the tendency or the course of natural world*").

But engineers and managers sometimes do not absorb the lessons of History.

But, not to accept the old division between conception and doing creates new power paradigms, as this implies a transfer of power to the front lines, or at least a tendency in distributing the power into the periphery. Distribute power full stop!

And this is not an easy task in western societies. That is why the shift must be a continuum process in which all the elements (*actors*) that deal with the process should and must be involved (Japanese *Kaisen*). Involvement and commitment, as vision and a holistic approach, are terms of a winning trajectory [1] in the present, to the future.

In fact, strategy is not only the art of preparing action plans, it is rather and increasingly the art to built an action stream from the continuum evolution of tactics. Strategy is a process that emerges in the course of making small decisions that solve immediate problems and answer to specific immediate needs.

If you evolve with try and error, deciding within action, you need to be able to adapt, to improvise all the time. You need to cultivate and enhance your sense of intuition.

[1] "**La science manipule les choses et renonce à les habiter**", Merleau-Ponty, *L'Oeil et lEsprit*, Folio essays, 1964

And all this defies traditional organization models: power models, organizational structure models and strategic decision models.

The new forms of management and organizational structure demand new ways to design information flows, implies new roles on responsibility, conducts to new forms of acting. The distribution of power from the center to the peripheries and the involvement of all the key actors also represent new models that demand new ways of managing and dealing with people.

These tendencies not only take place in the organizational domain, but can also be adapted to deal with the relationships among different organizations sharing a common goal. The point we are trying to make is that this approach can be implemented in projects concerning different kind of communities. Communities specifically arranged to act in circumscriptive tasks, acting as islands in the organization, communities that assume the scope of the entire organization, or "meta" entities, involving different organizations.

2. An Action Research Approach

In order to build up a platform for these communities to grow we used a socio-technical approach cemented on a methodological body – Action Research (*AR*).
The roots of *AR* can be traced earlier, but in the mid 40s, Kurt Lewin, an American Psychologist, constructed a theory of action research, described as "a process of spiral steps, each of which is composed of planning, action and evaluation of the results of action" (Kemmis and McTaggert, 1990). Kurt Lewin also stated "the researcher should include practitioners from the real world in all phases of inquiry" (McKernan, 1991) and "the research needed for social practice can best be characterized as research for social management or social engineering. It is a type of action-research, a comparative research on the conditions and effects of various forms of social action, and research leading to social action. Research that produces nothing but books will not suffice" (Lewin, 1946). Lewin's approach involves a spiral of steps, "each of which is composed of a circle of planning, action and fact-finding about the result of the action" (*ibid*). The basic cycle involves the following:

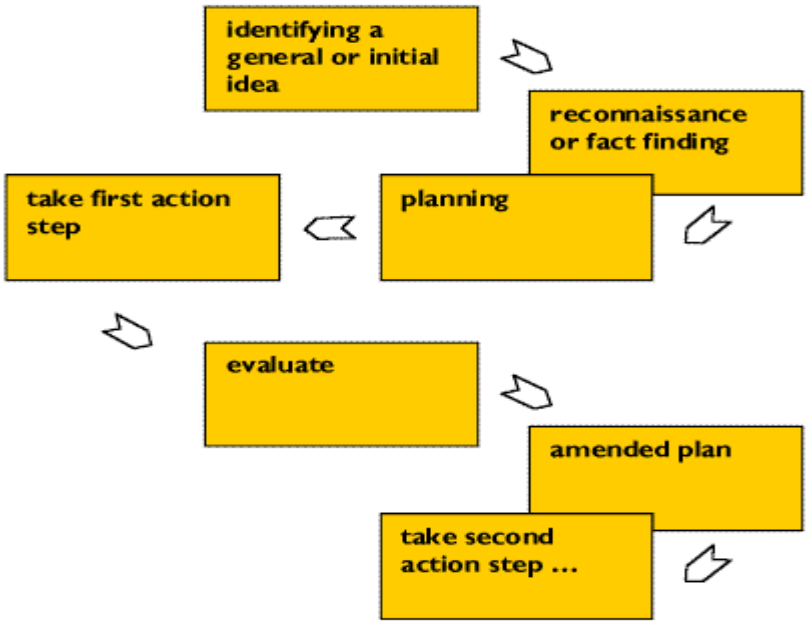

Fig. 1

From the
informal education encyclopedia - kurt lewin: groups, experiential learning and action research
(http://www.infed.org/thinkers/et-lewin.htm)

In fact *AR* consists of a collective cyclic process of spirals with collaboration through participation, in a way that knowledge emerges in order to change a system in a practical way. It is a research oriented for action and through action.

Being influenced by many different paradigms *AR* cannot be confined in a defined framework, but rather should be considered as a family of different research methodologies (Carr and Kemmis, 1986). There are at least three different approaches to action research: the scientific-technical positivist trend, the critical science perspective, and finally the mutual-collaborative practical interpretivist model. We will confine to this last participatory model as we consider the most relevant in terms of information systems development.

In participatory interpretivist Action Research the responsibility of theorizing, that is, the involvement in production of new ideas and concepts is shared with the client in a participation between pears (Whyte et al., 1991, p.20). Being interpretivist, the researcher becomes part of the study itself and increasing client participation contributes to group motivation, tending to produce aligned results and extending the initial social scope of action research. In this trend Baskerville and Wood-Harper (1996) identified seven key topics in conducting Action Research practices. We regroup these topics into the following six terms:

- **commitment** – it is important to ensure both that the client accepts a post-positivist approach and that a formal agreement is celebrated in order to give the researcher full liberty to act in the organization;
- **initial theoretical framework** – it is essential to have a departure theoretical plan, in order to register the constant corrections and subversions;
- **structured diaries** – as action research is an empirical approach, data collection is mainly qualitative and interpretative, so it is very important to design and specify data collection techniques in real time;
- **collaboration** – in a participatory process with the clients it is very important not to dominate the action, but rather share the knowledge on practical and theoretical aspects;
- **iterative cycles** – it is one of the main characteristics of action research to repeat phases in a spiral form. Failures are important and it is important to promote learning from them and to pursue action in order to overcame the problem situation;
- **generalize** – deductive generalizations are more based on the representativeness of the sample then on the number of observations.

We could state that participatory Action Research is based on hermeneutics, follows holistic views, uses inductive reasoning, searches for descriptive knowledge, integrates a values bounded stream and aims to, using action, produce action, that is, real problem solving action. This complex process is intended to be always cyclic, in permanent iteration and tentative dynamic alignment with the context.

In conducting an Action Research methodology it is necessary to begin by observing, to identify the key problems of the situation. Then you need to assimilate what you observed and think about the key identifications. You are then in conditions to act. Then it is necessary to reflect on the effects of the action performed and reinitiate again a new cycle. It is supposed to learn during this cyclic process, so the evolution is more like a spiral, with enlargement of views and maturation of perceptions. The "***double loop model***" of learning should always be a reference (Argyris and Schön, 1978).

Supposing an overall spiral evolution we can state *AR* evolves cyclically trough three stages of project development: ***prepare***, ***plan*** and ***evaluate***. Each stage evolves trough four steps: ***identify, think***, ***act*** and ***learn,*** as explored in the *Community Partnerships Kit* web site[1]:

(http://www.communitypartnerships.health.gov.au/cpkpdfs/CAM.pdf)

This complex structure of intervention should emerge in a proper context, able to ensure empowerment, collaboration trough participation, commitment to action, learning,

[1] *Austrian resource for groups wishing to undertake community action to prevent illicit drug use or address drug use where it occurs. The kit was commissioned as part of the Community Partnerships Initiative of the Commonwealth Department of Health and Aged Care. Turning Point Alcohol and Drug Centre in Melbourne undertook the development of the kit and the associated web site.*

emergence of knowledge, and proactively organizational change. But this context needs to be managed, in order to become possible and to in order to be adequate, that is, aligned with action.

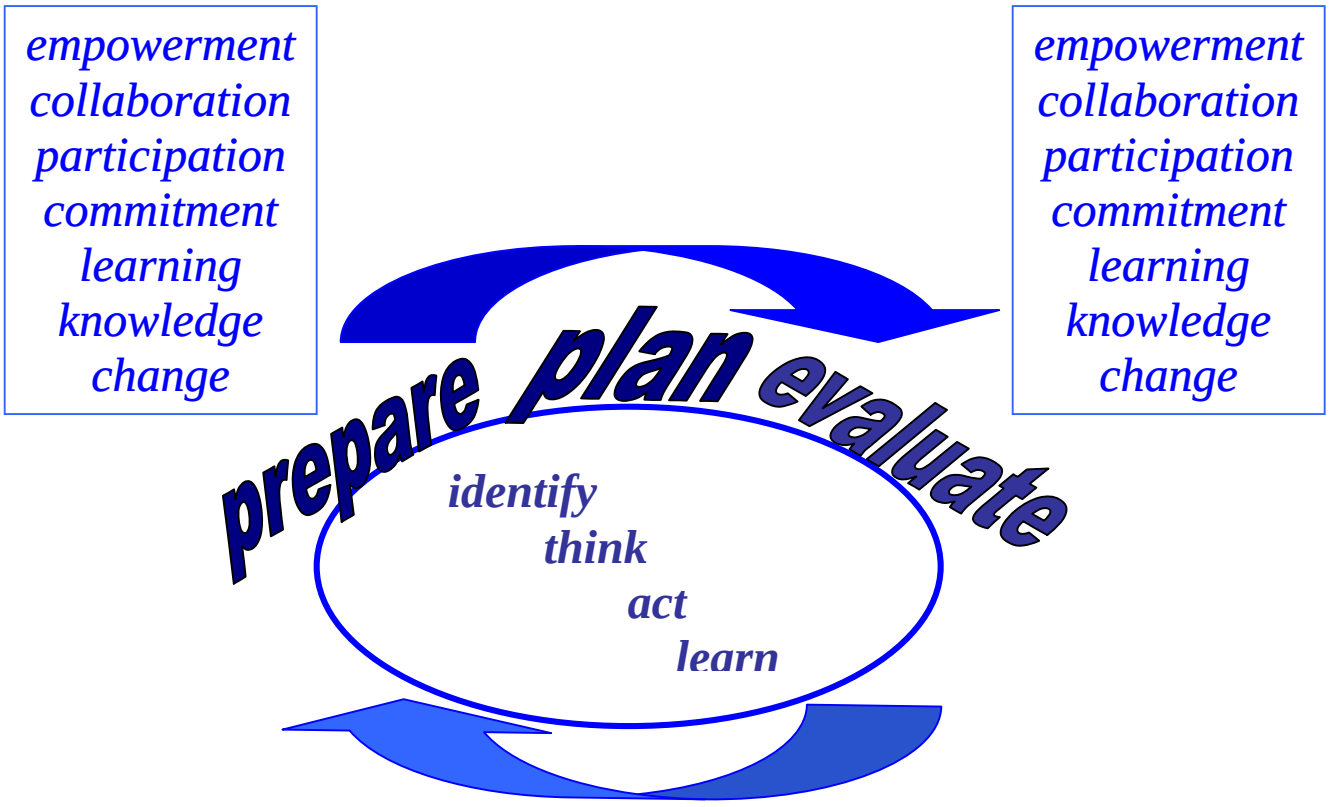

Fig. 2 - Action Research cycle and Table

	prepare	***plan***	***evaluate***
identify	*- communities* *- shared concerns in each community* *- shared experience and shared interests* *- how does road accidents affect each community*	*- priority of shared concerns* *- resources needed* *- range of responses*	*- what to evaluate* *- clients of the evaluation* *- how to measure project effects*
think	*- what is going on, why, and what should be done* *- common ground for action*	*- priorities for action* *- what strategies* *- how to prepare field of action*	*- key questions to evaluate project impact* *- resources needed to evaluate*
act	*- explore issues and concerns of actors involved* *- clarify common ground for action and shared aspects*	*- focus on shared aspects* *- develop a plan for action* *- put plan in action* *- revisit plan as needed*	*- resource and coordinate evaluation* *- collect information for evaluation*
learn	*- what common interests bring people together in*	*- test feasibility of plan* *- how to make action sustainable*	*- evaluate results for the communities*

	response to accident *- what are the different perspectives*	*- clarify differences*	*- evaluate results for the wider population* *- evaluate diffusion of results*

The role of the manager in an *AR* approach is to facilitate communication and inter-relation among all key actors. He must position in the centre of the organization or organizations, in a *web of inclusion*[2] "to tighten ties, provide increased exposure, and encourage greater actor participation" (Helgesen, 1995). These actors should negotiate between them with the manager mediation. The manager should maintain two different main stressing concerns: one, more immediate and direct, is translating the results of negotiations into rules and specifications that must be included in design and development (*ANT*); the other, more indirect and vague but not less important, is to contribute to built a strong sense of community (building *COPs*) and facilitate the emergence of a learning ambience (*Organizational Learning*), preparing both people and systems to adopt an ability to change (*Technology Drift*). All these actions interact with one another and tend to reinforce their power with this interaction.

3. Technological Supporting Platform

In order to allow the new managing style and the settling of effective communities of practice the main supporting structure is in fact cultural. An evolving ambience, free communication among everybody, decentralized decision, free access to essential information, data base access, automatic entries in a central data base, information access trough different keys, an informal conviviality style and, finally, a global cohesion and a common sense of goal. All these conditions, apart from being human styled and culturally dependent, need a special technological infrastructure to be able to evolve and mature. In this sense we focus on a Intranet, Internet, Extranet system using a Web content manager as a tool per se, but also as a context for sharing working practices and, finally, as an infrastructure for learning.

3.1 Communities of Practice

A content manager provides a context for communication, both in an Internet and in an Intranet environment. This environment context and content manager system helps to built communities of practice specifically oriented to achieve specific goals.

Communities of Practice are groups working together, sharing the same goals, using the same or different expertises, sharing an informal ambience in which there are no hierarchies. The elements of the group act as pears, working collaboratively on the same

[2] *"Also like in a spider's web, the structures are continually being built up, stretched, altered, modified, and transformed*".

problems, from different perspectives, and pursuing a shared goal, that is, envisaging the same final practical results. These people can operate geographically and functionally from different places and cultures. They can belong to the same department of the same organization, to different departments of the same organization or, even, in the case we are concerned with, belong to different institutions. In this sense we are dealing with institutional collaboration.

3.2 Learning Organization

The Learning Organization (LO) is a domain in which Peter Senge has acknowledged a significant contribution. LO is, in fact, a development of the Organizational Learning, a sub-area of the more broad and classic subject of learning. Organizational Learning is the territory where Argyris and Schön both pontificate.

Deeply convinced that "the" optimal LO is unattainable, we try to discover a significant edge in the words of people who tried to define the concept:

> *"The essence of organizational learning is the organization's ability to use the amazing mental capacity of all its members to create the kind of processes that will improve its own"* (Nancy Dixon, 1994)
>
> *"A Learning Company is an organization that facilitates the learning of all its members and continually transforms itself"* (M. Pedler, J. Burgoyne and Tom Boydell, 1991)
>
> *"Organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together"* (Peter Senge, 1990)
>
> *"Learning organizations are those that have in place systems, mechanisms and processes, that are used to continually enhance their capabilities and those who work with it or for it, to achieve sustainable objectives - for themselves and the communities in which they participate"* **(John Farago & David Skyrme, 1995)**

Beyond this attempt to define an archetype we intend that the environment for a LO must be suitably disabled by a content manager system, as previously described. An infrastructure that automatically organizes information, traces transactions, enables a glossary and a search engine. A system that accommodates files in a data base environment, environment that ensures different accesses to documents, papers, news, facilitating a dynamic interaction between users, and between the users and the managers of the infrastructure.

In an attempt to define such an environment, we focus in a product that is in an ongoing process of development – the distributed knowledge management solution of **escrita digital**, a small Portuguese PME.

Fig.3

This product, with an entry panel like the one shown in Fig.3 behaves like a portal with an integrated data base and facilities, represents a platform that enables the dynamic evolution of Internet, Intranet and Extranet applications. It enables the manipulation, classification and index of multimedia contents, allowing the information segmentation by user profile. Accepting different technological bases, such as HTML, DHTML, JAVA, JAVASCRIPT, FLASH, and using a XML gateway enables an easy connection with other applications, as well as the export and import of information from and to a diversity of different contents. It enables the setting of templates, which allows reasonably illiterate users to edit and produce Web pages. It allows document management. It embodies workflow processing, and a wide range of statistical rates and analysis, as we can see in Fig. 4.

Registered Client	Accesses				More Accessed Items					
	Day	Week	Month	Accumulated	ID	Ac.	ID	Ac.	ID	Ac.
Client A	0	3	8	33	N67	7	N99	5	N13	3
Client B	1	4	9	45	N33	6	N45	6	N55	6
Client C	0	0	3	12	N99	3	N77	2	N45	

Fig. 4

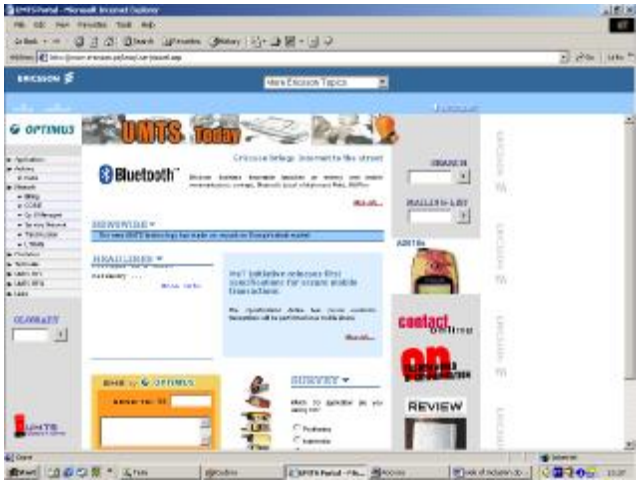

Fig. 5

The content one intend to input can be introduced either directly or as html file. Simple, but effective, that is why we stress that this kind of “weapon” can indeed contribute to the emergence of a culture of collaborating communities, as it can represent strong steps into the organizational learning. Figures 5 and 6 are displays of different phases of use.


Fig. 6

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