

## An invisible school

María Cecilia Plested-Alvarez  
 Universidad de Antioquia  
 GITT; COLTERM  
 Medellín, Colombia  
 plested@gmail.com

Eugenia Ramírez  
 Línea Pedagogía y Virtualidad  
 GITT; COLTERM  
 Medellín, Colombia  
 eramirezisaza@gmail.com

Adriana Lucia Díaz  
 Universidad de Antioquia  
 GITT; COLTERM  
 Medellín, Colombia  
 adiaz.trad@gmail.com

**Abstract**— *creating an invisible school is to achieve the systematization of experiences developed with ICT for the appropriation of digital process among pupils, teaching of primary and secondary school, and university researchers, integrating them to the conceptual understanding of the function knowledge networks. In this case, it is the experience that we present as RedCO/GITT as a knowledge network with the end result of an invisible school as the first step to create on a virtual university.*

**Keywords**— ITC, knowledge network, virtuality, autonomous education, invisible schools, knowledge transfer, specialized communication

## I. INTRODUCTION

This research allows a better understanding of the generation and sustainability of virtual knowledge networks as a scene of specialized training and communication. The organized and systematized academic practices in the knowledge network - REDCO, have permitted us to confirm a process of production of knowledge that contributes to the development of academic, social and cultural scenarios to the understanding of new ways of communication, management and transfer of knowledge in all academic levels to constitute an invisible school [1], [2].

In this sense, from the dynamics and development of REDCO, interpretation and analysis of training and organizational processes inside, the role of ICT is highlighted as educational innovations for sustainable development in order to articulate efforts between academic, social, and cultural peers in different local and international scenarios.

The Decade of the nineties emerges as an academic setting in Colombia. The need to strengthen the research processes being carried out in the country, as a social possibility that can support the inclusion of students in the academic process creating the 'seedbed of research' that invokes the metaphor of seed to realize a new state of formation and growth but also of protection, and since then, it is institutionalized [3]. Creating groups of mainly

undergraduate students who begin in research-related activities and are dynamic involved in some of the specific tasks, such as analysis of data, information and collection or conceptual integrated in other scientific groups, were an important aim.

The analysis and evaluation of experiences in ICT scenarios (virtual), and systematized collation on the developments in the management and transfer of knowledge, use and appropriation of ICT, processes of communication, information, interaction, participation, innovation and cooperation, confirmed REDCO as a methodological matrix towards the management and transfer of knowledge in different educational levels. Through these scenarios, the consolidation of an Invisible School is allowed.

## II. METHODOLOGY

The methodologies of this research project provide the possibility of proposing and analyzing in-depth processes of meaningful learning, self-group-analysis and self-assessment to be centered on each participant, i.e. researcher, facilitator, students or coordinator [4], [5]. The core of development is the collaborative analytical work among all participants, according to the teams or institutions involved in the macro project, in this case the CIER Occidente (West). The research group of Education and Virtuality of GITT (Universidad de Antioquia) determinates the Leo XIII educational institution of El Peñol and the I. school Las Palmas de Envigado as its experimental spaces [6]. Therefore, the central purpose of the program becomes a line to guide the development of each internal project, whose individual results summed up in cooperation to strengthen and advance all and each of the applied results that are generated in an integrated and collaborative way between all the cooperating institutions.

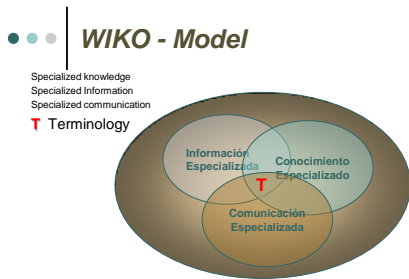
Planning and respect for the individual and collective activities schedule allow a harmonic, founded and efficient progress in the process of research and development [7], [8]. The research project is an integrated participatory and



groups of mainly

collaborative activity, whose process and results should strengthen the program in the first phase and make it sustainable, sustainable and replicable in other levels and fields of education in the country [9]. This methodology at the same time is a socializing activity where proposals for learning, research analysis or results, that generate new knowledge, are collective among peers and between all stakeholders of a group or a team [10].

Figure 1. WIKO – Model, Budin 1996; interaction between specialized knowledge – Information – Communication through terminologies as organization of knowledge

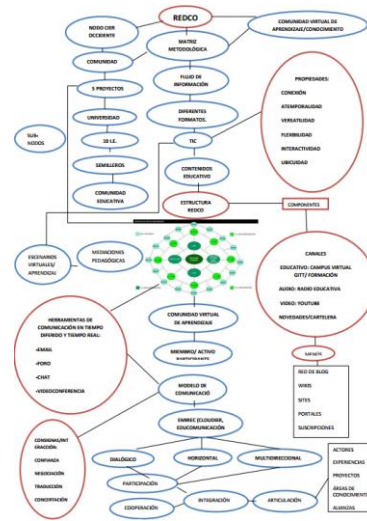


In this case, we precise a theoretical model derived from the WIKO – Model of Budin (8), where the most important issue is the confluence of knowledge through the knowledge organization: The specialized terminology is the core of the process that supports all other educational issues and permits the interaction at all levels in the REDCO as a formation improvement in this subject field. It is also important to understand this conceptualization to support a ‘Virtual networking’ [11]. For Lopera (2000) it is a multidisciplinary group of people and institutions that are associated to investigate or develop projects with social meaning, and so rely on the information you provide and flow through networks of information, which is transferred through the telematics networks. To Seufert (2003), knowledge networks are objects that fundamentally have been established between individuals, groups and organizations, in which the bilateral relations and the integrity of the activities carried out by all participants of the knowledge network are important. Meanwhile Castellanos (2004) defines a network of knowledge as a community of people who, in a formal or informal way, occasionally, part-time or dedicated way, they work with a common interest and based their actions on the construction, development and socialization of knowledge. Casas (2001) defines that these networks involve both professional networking and training, as well as broadcasting and transmission networks of knowledge and innovations, which would be giving rise to the formation of regional connectivity of knowledge [12].

Figure 2. REDCO, the virtual network of GITT



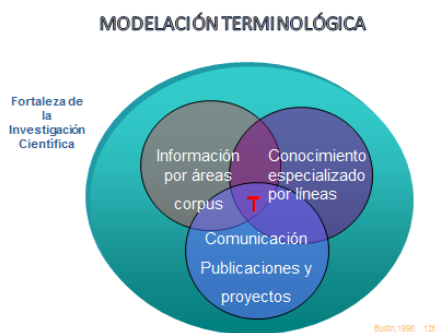
Figure 3. Internal structure of REDCO



The knowledge networks are collaborative systems of interactions between peers who intended a construction and dissemination of knowledge [13]. The telematics to support knowledge networks is enhancing the scope of them. The educational and conceptual transformations that are producing the technological applications in all types of organizations are setting up a global society through the development of knowledge networks composed of individuals who interact cognitively through them, either personally or as members of groups of big organizations to which they belong [14], [15]. Those actions are transforming the educational framework at all levels.

### CORPUS

Four seed-research groups constitute the corpus of this work. These are parts of the developments of the research group on terminology and translation GITT, line of education and virtuality, regarding integration of ICT in research projects as ‘Apropiación de TIC en Escuela Innovadoras del CIER Occidente a nivel nacional’, ‘REDCO para dos semilleros en Instituciones Educativas Innovadoras en Medellín’, el ‘Semillero Universitario GITT’ and the seed group of the Calazans School in Medellín, allowed the conceptual analysis and realization of scientific activities as part of their training. Figure 4. Terminology modeling as knowledge organization



The structure of the knowledge network, taking into account the organizational correlation of terminology modeling of Budin [7] (see figure 4), allows a circulation of specialized information much clearer and precise that gives students better approach to knowledge and to the mobility within the network. In the majority of cases, social networks of knowledge or education supported by WEB, such as Virtual Campus or ICT procedures, lead the constitution of invisible schools.

This is a comprehensive research of qualitative order, it means a participative action research that located the subject-object in the construction of knowledge in a horizontal place and favors the participation as a main principle of such processes. The above allows a much more understandable flow of circulating knowledge, precisely because of the first definition of the basic concepts that are used for the development of the various activities and educational tasks at the different levels of the process. Therefore, the relationship between science, technology and society is currently required to foster a technoscientific education, aimed at the acquisition of knowledge in an autonomous, efficient, contextualized and virtual way.

The educational paradigms from the new knowledge society, marked precisely by the WEB and ICT, have forced educational systems to transform the programmatic content, attending to the demands of

the environment, generating a shift in the way they conceive, plan and direct processes.

A prominent example that marks a radical change in the conceptualization of this world is the Bologna Communiqué. The demands set out in that document, forced universities, as educational institutions, to improve their curricula to offer programs, plans and projects that allow the approval of acquired knowledge.

According to our academic point of view and scientific approach, we believe that it must also be able to promote the development of competences in the students from their own particular skills according to Gardner [16] and Pulgarín & Pleded [1] not only in Europe but also in our region.

### THE VIRTUAL STRUCTURE

Figure 5. Architecture and interaction of actors at the virtual level.

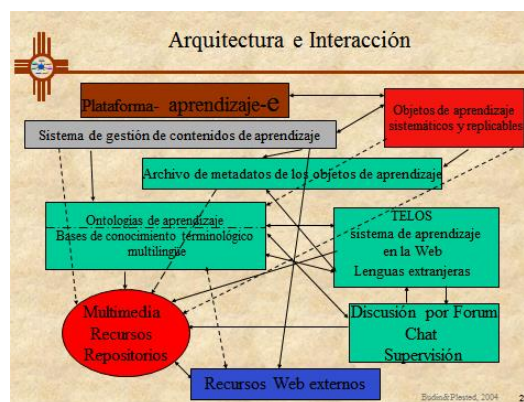


Figure 5 shows the process of strengthening of a scientific community within a network of knowledge. That allows the verification of the configuration process of virtual schools, as spaces for educational training of primary and secondary students and their own teachers as well as the participation of college professors and doctoral students to improve the process itself. According to the progress and results, in short and at medium term, those different processes reached and ratified the possibility to generate a virtual University.

A fundamental aspect of the pedagogic-methodological process of development of the network of knowledge and the process for the generation of an invisible school is the inner architecture that supports the network and the various specialized communities inside as inward development in itself.

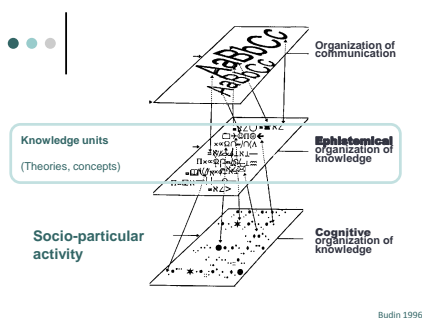


## CONCLUSIONS

These collective experiences allowed analyzing and evaluating the development, production and contribution of all participants in these scenarios (virtual) ICT. The first analysis enabled to check the systematization of the developments in the management and transfer of knowledge, in the use and appropriation of ICT in the processes of communication, information, interaction, participation, innovation and cooperation for a network with support of REDCO.

Therefore, the dynamics and development of REDCO and the contextualized analysis of the training and organizational processes, also from the internal structure itself including experiences oriented to co-creation as a collaborative work among peers by means of virtual environments, achieved awareness, motivation and appropriation by the socio-cultural agents of the educational institutions and all members of the research groups [15].

Figure 6. The epistemological level of knowledge, Budin 1996



The results of this research project have improved the epistemological understanding of the main topics and concentrate the work within the concept units' analysis and the knowledge transfer and transformation of some basic parameters of the virtual educational activities as the most important step to develop the whole process in the direction of a very dynamic invisible school [17].

This structure was confirmed as a methodological matrix for knowledge management, as a

place for new virtual scenarios. Subsequent to this, it promotes the establishment of other similar joint venture activities at the virtual level in other areas as social, educational and cultural pilot projects for the region and the country [18]. This experience was also confirmed as the basic step for the creation of other invisible schools, and in the future could be the model to constitute a virtual university.

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