Chapter III

ICT, Knowledge Construction, and Evolution: Subject, Community, and Society

Antonio Cartelli
University of Cassino, Italy

Abstract

After a short introduction on the hypotheses scholars developed for explaining knowledge construction and evolution in mankind, the role that ICT is playing on this phenomenon is described. From the results of many studies and from the separation today well settled between human knowledge and corporate knowledge, the idea of a tri-partition of knowledge contexts arises and is developed and analyzed. The idea of three different kinds of knowledge receives good support from the observation of the effects of ICT on individuals, communities/organizations, and society; it sounds as the confirmation for the three different contexts of knowledge construction and evolution the author hypothesizes. The experiences described in this
chapter show how ICT, while playing a relevant role in each of the above environments, influences all the others and determines a continuous evolution of knowledge in the three contexts. The hypothesized perspective opens to new interpretations for knowledge phenomena, leads to the overcoming of misleading learning explanations, and gives a strong impulse to the planning of projects for the introduction of ICT in education.

Introduction

The 20th century has marked the transformation of the philosophical definition and explanation of knowledge into a different one, mostly depending on the ideas emerging from human disciplines like psychology, pedagogy, anthropology, sociology, etc. (i.e., many contributions are also due to biology, neurophysiology and cybernetics). Two main ways for interpreting knowledge construction and evolution affirmed during last decades: the former one mostly looking at the individual, the latter one emerging from corporate and organization studies.

In what follows the above perspectives are analyzed and the role IT and ICT had in explaining knowledge construction are recalled.

Theories for Knowledge Development in Individuals

J. Piaget and D. P. Ausubel were among the first scientists stating the importance of subjects’ mental actions in cognitive processes. They assigned a great role to subject-reality interaction for the explanation of knowledge development and evolution; for this reason they are also considered cognitivists and precursors of constructivism; the same scholars, on another hand, assign a little or no role to social and cultural interactions in knowledge construction.

J. Piaget hypothesized different stages in cognitive development, for example, he stated that the evolution of knowledge in a subject is marked by the transition from a first stage to the following one; this process is the result of the interaction between the individual and the environment and is based on adaptation processes marked by the assimilation of new stimuli in old mental schemes and by the accommodation of old mental schemes into new ones (Piaget, 1971, 1973). He also hypothesized the existence of a genetic epistemology to explain the genesis of knowledge in mankind, for example, the individual cognitive development runs parallel to history of science and the analysis of pupils’ ideas can be used to explain the origin of scientific concepts.