Social-Constructivism: Futuristic Sphere for eLearning in HEIs

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Abstract

Under the theory of ?objectivism? a teacher is ?sage-on-the-stage? where student is passive while teacher is active and whatever is delivered by the teacher is accepted by the student unquestionably. However, in ?constructivism? learning environment a teacher is supposed to play the role of ?guide-on-theside? thereby giving more space and place to the students for learning by themselves and on their own. There is mushrooming research on the mundane roles of information and communication technologies (ICTs) in the learning environments. Research reveals that networking technologies and social software has created the opportunities to shift from traditional and biblical models of teaching through objectivism to the new styles of learning under the models of cognitive and social constructivism. This paper is effort to trace the milestones on the way from objectivism to constructivism particularly in the higher education institutions (HEIs).

Index terms— ICTs, HEIs, Paradigm-Shift, Objectivism, Constructivism,

1 Introduction

CTs are creating a new global economy, which uses technology as power; information as fuel and knowledge controls the driving seat and these technologies are emerging as the electricity of information-age (Macleod, 2005) to construct an information-society and knowledge-economy (Hameed, 2007). However, technological innovations and applications depend on the education system of a country for example; any digital initiative is fueled by a batch of ICT-professionals to develop and users to apply technologies for organizational objectives (Nawaz, 2010). It is the education system which helps a nation in taming ICTs for government, business, agriculture, banking and education by generating professionals however, this requires the education system itself to be computerized first (Nawaz, 2011;Nawaz, 2012aNawaz, , 2012b)).

As the learning technologies are becoming inexpensive and widely accessible, the models of teaching and learning are significantly changing. There are ”paradigm shifts” in different dimensions of eLearning and the environment around it. For example, modern eTeacher is mentor, coach or facilitator for the successful integration of ICTs into the pedagogy. The teacher's role has shifted from being 'a sage on the stage' to 'guide on the side' (Mehra & Mital, 2007). Likewise, contemporary students are called 'Millennials, Electronic Natives, the Net Generation' who are grown up digital therefore possess absolutely new learning habits like independence and autonomy in their learning styles and multitasking due to the availability of new gadgets (Nawaz & Kundi, 2010b;Kundi & Nawaz, 2010).

Within education community, ICTs have begun penetration, for example, in Western Europe, it is common to use ICT for logistical, organizational and educational functions of higher education institutions (HEIs) (Baumeister, 2006) showing that ICTs are changing the nature of work and the workplace for all the university constituents (Qureshi et al., 2009). ICTs are changing the organization and delivery of higher education because they are adopting alternatives to the traditional classroom pedagogy and developing a variety of eLearning courses (Nawaz et al, 2011d). Research also suggests that ICTs offer new learning opportunities for students 'eLearning', develop teacher's professional capabilities 'ePedagogy' and strengthen institutional capacity 'eEducation' and most universities today offer some form of eLearning (Nawaz et al., 2011a).

Given the new learning environments emanating from the explosion of ICTs, the pedagogy is departing from transmitting knowledge based on behaviorism where students are passive receivers of whatever is given by the teacher, to negotiated and harvested knowledge founded on cognitive and social constructivism where students are free to construct their knowledge by negotiating with others and harvesting the learning process (Kundi & Nawaz, 2010). The use of ICTs in and for education is rapidly expanding in many countries and considered both as a necessity and an opportunity (Nawaz & Zubair, 2012a).

2 II.

3 Icts In Heis

eLearning is a popular topic for the researchers on higher education and corporate training and explained as the 'application of electronic technologies' in supporting, enhancing and delivering education (teaching and learning) (Qureshi et al., 2009). ICTs represent computers, networks, software, Internet, wireless and mobile technologies to access, analyze, create, distribute, exchange and use facts and figures (Nawaz & Kundi, 2010c). eLearning is an individualized instruction accessed over a public (Internet) or private (Intranet) networks therefore, it is also known as 'internet-based training (Nawaz et al., 2011a).' Several terminologies are used for eLearning: computer-based instruction, computer-assisted instruction, web-based learning, electronic learning, distance education, distance learning, online instruction, multimedia instruction, online courses, networked learning, virtual classrooms, and so on (Nawaz, 2012a).

Traditionally, students used transmissive modes of learning, however, now there are shifts from contentcentered to competency-based curricula as well as departures from teacher-centered to student-centered delivery where students are encouraged to take on the driving seat for self-learning. eLearning offers a complete information technology support to these innovations (Nawaz et al., 2011d) for example, its tools and techniques can be applied in any learning situation, no matter whether it happens face-to-face, in blended or hybrid courses, or online virtual learning (Nawaz et al., 2011a). There are two types of eLearning: self-managed (asynchronous) and teacher-led (synchronous) where first is off-line while the later is online. Web-based learning is globally accessible, easily maintainable, platform-independent, secure, and quickly updatable and entertains a diversity of learning styles by providing a self-controlled system (Nawaz & Zubair, 2012b).

In nutshell, HEIs are passing through an evolutionary process of getting digitized from simple to sophisticated chip-technologies. eLearning begins with a partial or supplementary use of ICTs in classroom then steps into a blended or hybrid use (a mix of face-2-face and electronic instruction), and finally, emerges as a fully online synchronous and asynchronous virtual learning environments serving physically dispersed learners (Kundi & Nawaz, 2010). However, it can never be possible to completely replace face to face pedagogy and learning with virtual education except some institutions may be operating completely online but rest of the institutions will continue blended use of educational technologies because 'this, in itself, serves the purpose' (Nawaz et al., 2011d).

4 III.

5 Approaches To E-Learning

It is well-established that the use of ICTs is dependant on the perceptions of developers and users about the nature of technologies and their role in different walks of life (Aviram & Tami, 2004). Sasseville (2004) have found that technology-related changes are "not perceived as a collective experience or social change rather, personal challenge." An analysis of the literature suggests that two broader theories are discussed over and over saying that ICTs can either play 'instrumental' or 'substantive' role in the learning process (Macleod, 2005). Instrumental view asserts that ICTs are just technologies and their use defines their role while substantive view posits that these technologies have the power to change the society and just their existence can make the difference. Likewise, the same ideas are also characterized as 'instrumental' and 'liberal' theories of eLearning (Nawaz & Qureshi, 2010b). a) Objectivism Historically, computer-based learning has been built around the realist/objectivist notions of knowledge with the assumption that reading, watching videos or controlling a button on these digital gadgets constituted 'active learning' but experience testifies that these models have failed to bridge the gap between theory-npractice (Nawaz & Kundi, 2010c). In this mode, learning is achieved through a model where teacher comes wellprepared with learning contents, which are simply transmitted to the students who receive everything passively to remember whatever is given by the teachers and instructors and then evaluated through observable measures like tests, assignments and examinations (Kundi & Nawaz, 2010).

As a psychological theory, behaviorism emerged as a reaction to theories of mind in late 19th century, suggesting that mental processes cannot be understood without objective scientific methods like observational and quantifiable investigation (Ward et al., 2006). The objectivist teaching gives complete control of materials to the teacher who manages the pace and direction of learning thereby making learning a sequential process where there is a single reality about which students have to demonstrate their command and "understandings through declarative, procedural and conditional knowledge (Phillips et al., 2008)." Taken together, objectivist teaching and learning is based more on visible dimensions of education and less on cognitive and social determinants of pedagogy and learning (Nawaz et al., 2011a).

6 b) Constructivism

With the emergence of collaborative technologies, it has been recognized that behaviorist models do not fit with contemporary teaching and learning environments, therefore 7 current research is focusing on the development of constructivist models of eLearning (Nawaz & Qureshi, 2010b). Constructivists contend that ICTs should not be guided by a technologically deterministic approach rather in the context of social, cultural, political and economic dimensions in the sense that culturally relevant online content, interfaces and multimedia can help in social inclusion to the developing countries (Kundi & Nawaz, 2010). Furthermore, the effectiveness of behavioral approach is questionable in areas where there is the The constructivists believe that there is no single version of reality, rather a multitude of realities situated within each learner. As such, learning is dependent upon learners' abilities of analyzing, synthesizing and evaluating information to construct "meaningful, personalized knowledge (Phillips et al., 2008)." The constructivist theories of learning dominate today and propagate that learning is achieved by the active construction of knowledge supported by various perspectives within meaningful contexts and social interactions. These environments create engaging and content-relevant experiences by utilizing ICTs and resources to support unique learning goals and knowledge construction (Nawaz, 2012b).

The strengths of constructivism lie in its emphasis on learning as a process of personal understanding and the development of meaning where learning is viewed as the construction of meaning rather than the memorization of facts. eLearning environments provide many opportunities of student-centered constructivist learning that is situated in the contexts (Nawaz & Kundi, 2010c). Since knowledge is quickly changing; the design and development principles need to be aligned with the emerging requirements of teachers and students, which are the provision of such cognitive tools, which can be adapted for intellectual partnerships among teachers and students to facilitate critical thinking and higher-order learning (Kundi & Nawaz, 2010).

7 i. Cognitive Constructivism

The cognitive constructivism gives priority to the cognitive powers of an individual rather than the behavioral or physical dimensions, for example, users' 'learning-styles' are used to measure the cognitive trends the users. The developers of eLearning face the challenges of producing systems, which accommodate individual differences such as nationality, gender and cognitive learning style (Qureshi et al., 2009). The ICTs can play a supplemental as well as central role in learning by providing digital cognitive or adaptive tools or systems to support constructivist learning **??**Nawaz & Kundi, 2010a). The design of computer-based learning has undergone a paradigm shift; moving students away from creating technical rationality with objectivism, to the use of ICTs in developing cognitive tools for constructivist learning (Nawaz & Kundi, 2010c).

Since students vary in their cognitive or learning styles therefore, they benefit more from those teaching techniques that appeal to their individual styles (Cagiltay et al., 2006). Similarly, the rapid development of digital technologies in the emerging information society is forcing the individuals to command and employ cognitive skills in teaching and learning process (Aviram & Eshet-Alkalai, 2006). Thus, in cognitive learning learners create and test their own hypotheses about the realities and analyze data according to their learningstyle, preferences and "a dynamic process of personal trial and error (Ward et al., 2006)" with the cognitive participation of teacher (Nawaz et al., 2011a).

8 ii. Social Constructivism

In contrast to cognitive-constructivism, 'socialconstructivism' emphasizes 'collective-learning' where the role of teachers, parents, peers and other community members in helping learners becomes prominent. Social constructivists emphasize that learning is active, contextual and social therefore the best method is 'group-learning' where teacher is a facilitator and guide (Nawaz & Qureshi, 2010b). Social constructivists explain the technology-adoption as a process of involving social groups into the innovation process where learning takes place on the learners' experiences, knowledge, habits, and preferences (Kundi & Nawaz, 2010). In contrast to traditional classrooms where teachers used a linear model and one-way communication, the modern learning is becoming more personalized, student-centric, non-linear and learnerdirected (Nawaz, 2012a).

While cognitive constructivists believe that learning takes place through interaction with environmental stimuli alone, social constructivists argue that culture also influences the design and development of the learning models (Qureshi et al., 2009). Therefore, it is necessary to move eLearning beyond learning management systems and engage students in an active use of the web as a resource for their self-governed, problem-based and collaborative activities like using social software (Nawaz, 2011). The concept of social constructivism has been around since 1990s when research started on the interpretivism in the design and development of computer-based information systems (Nawaz, 2012b).

The extreme form of constructivism is social constructivism, which is gaining foothold in higher education because teaching and learning can now easily be undertaken as a social and community activity (Sasseville, 2004) thereby propagating collective (social) as well as individual (cognitive) learning with the help of traditional email/chatting and modern wikis, blogs, vblogs, RSS feeds and several emerging collaborative technologies (Klamma et al., (2007). For example, RSS is a format used to publish frequently updated works like blog-entries, new headlines, audio and video publications **??**Wikipedia, 2011).

9 iii. Signposts Of Social Constructivism

The change in teaching, learning and education management is not just technical; it has rather transformed the whole scenario of education in HEIs. The tenets of globalization in the background of global village are not neutral rather contain ideological underpinnings which influence the technology-users not only the way they work rather their perception of pedagogy, learning and education delivery has gone through metamorphosis (Nawaz et al., 2011a). Summarizing the multiplicity of these paradigm shifts it can be noted that this is the shift from instruction to construction and discovery; teacher-centered to learnercentered pedagogy; teacher as transmitter to the teacher as facilitator; absorbing material to learning how to navigate and how to learn; one-size-fits-all to customized learning; linear to hypermedia learning; learning as torture to learning as fun, and, from school to lifelong learning (Nawaz & Zubair, 2012b).

In the present knowledge-society where there is information overload the profession of teaching is shifting from transferring knowledge to guiding learning processes (Qureshi et al., 2009). Research tells that the condition of ICTs in HEIs of UK and Ghana have been changing over the last decade from seeing ICTs as either a subject or a set of skills to recognizing the importance of ICTs as tools for learning. If used adequately, ICTs can assist a pedagogical shift resulting into a constructive educational interaction between teachers and learners (Nawaz, 2010). There is need to implement a wider range of teaching and learning strategies based on a techno-constructivist paradigm that is aligned with the skills needed for an information society (Nawaz et al., 2011d).

10 a) From Technocracy to Democracy

The higher education is moving away from an 'elite system to a mass education system' as it is evident from the mushrooming number of students around the world (Nawaz & Kundi, 2010b). Modern higher education can perform new functions in the favor of society at national and international levels, for example: identify the preconditions for development; provide education for all; produce graduates to provide leadership roles in education as researchers, teachers, consultants and managers for public and private sectors; enhance educational management, and finally, HEIs can go beyond their traditional models to new formats of learning, teaching and research (Nawaz & Kundi, 2010c). Furthermore, eLearning and digital literacy have the potential to shift power bases for developing countries from elites to masses by elevating the education systems to capitalize on the collective intellectual capital of educators and educated (Nawaz et al., 2011a).

11 i. Life-Long Learning (LLL)

eLearning is defined as the use of ICTs for student-oriented, open, active, collaborative, and lifelong teaching-learning processes (Thurab-Nkhosi et al., 2005). The difference between 'traditional and current education' is that formerly people were used to 'Learn at a given age' while current education is for 'Lifelong learning' (Nawaz, 2010). The European Commission defines lifelong learning as any activity undertaken at any stage of life for improving knowledge, skills and competences for personal, social and/or employment-related purposes (Nawaz & Kundi, 2010b).

Several studies suggest that ICTs can transform the education by motivating the students toward lifelong learning (Valdez et al. 2004). Similarly, new functions of HEIs include meeting the needs of learners and teachers for "lifelong learning (Goddard & Cornford, (2007)." UNESCO adopted Lifelong Learning as a master concept in 1970 after recognizing the relationship between the mass-education and economic and social outcomes therefore, by the end of the last century most world governments had recognized the importance of support for lifelong learning (Nawaz, 2010).

ii. Education For All (EFA)

In a conference by UNESCO on 'Education for All', broader objectives, requirements and strategies have been identified by the participants from member countries, which include: 1. Create such educational contents and process which fits within local context of social and cultural requirements with modern ICTs to create individual autonomy in the global society. 2. Develop such formal and informal education services, which are accessible to all. 3. Harness the ICTs for all in order to broaden the reach of education, particularly for the excluded and underprivileged groups. 4. Replace costly and culturally alien education structures with less expensive systems, which are more flexible, diversified and globally affordable (Nawaz & Qureshi, 2010b). One of the biggest expectations from eLearning is about its ability to offer equal education for everyone. For example, the eCourses over internet have the power to reach any corner of the planet and deliver same highquality education everywhere (Nawaz, 2010). The technological, economic, and social changes of the past decades have made education for all (EFA) more significant than ever before therefore, HEIs are making efforts to bring educational opportunities to all and provide learners with knowledge and skills for evolving workplaces and sophisticated living environments, and to prepare citizens for lifelong learning (Nawaz, 2011).

iii. Bridging the Digital Divide (DOI)

The issue of 'digital-divide' is commonplace and has generated a plethora of public addresses, reports, policies, and plans thereby attesting the importance of the concept (Macleod, 2005). Though computers are becoming more prevalent, the rapidly increasing digital divide continues to separate those who have access to ICTs from those who do not thus, today is a world of many divides, with 'Digital-Divide' on the top, which is generating and worsening other refers to the divergence between individuals, communities, cultures and nations at socio-

economic levels in terms of access to ICTs and use of internet (Moolman & Blignaut, 2008). Access and digital divide have always been an issue for eLearning in many countries (Koo, 2008).

Research asserts that educational technologies have a key role in effectively reducing the digital divide particularly in the developing states. Digital Opportunity initiatives (DOI) are the efforts to bridge the digital divide (Hameed, 2007). Policy makers in Africa and elsewhere have put forth technology, technical competence, and computer and information literacy as solutions for many of the problems, like, teacher shortages, low achievement, high drop-out rates, lack of opportunities and materials (Wells, 2007). Likewise, the incorporation of ICT into the educational contents is promoted as a key step to bridge the digital divide (Nawaz & Qureshi, 2010a). HEC (2012) resolves on its website that by providing the HEIs with ICT-infrastructure, the nation will become capable to achieve sustainable economic growth and prosperity for all citizens and thereby bridge the digital divide between institutions in Pakistan and worldwide.

12 b) From Computerization to Personalization

When ICTs emerged, their primary use was the automation of individual and organizational jobs therefore no consideration was given to the user's personal relation with technology or customized use of ICTs. It was simply not possible because technologies did not allow so whatever was done by technology was great. In this way, there was computerization or digitization of the individuals and organizations and not otherwise (Nawaz & Kundi, 2010c). However, as the computer technologies evolved into first information technologies and then ICTs, the scenario has begun to change. Now, ICTs are more diverse, powerful, mobile and integrative to help users in personalizing and adapting the ICTs to their individual requirements and not otherwise).

13 i. Computerization of Individuals and Organizations

Transaction processing systems (TPS) were the first popular programs to automate mechanical, structured and routine matters and decisions. So the view of technology was naturally 'instrumental' and not 'substantive' in the sense that computerization was considered as a neutral process with no implications for humans and therefore society at large (Mehra & Mital, 2007). Before the emergence of new social technologies, the ICTs were not capable to be used for broader and instant social interactions therefore; most of the applications remained instrumental and not liberal and substantive (Nawaz & Kundi, 2010b).

ii. Personalization and Adaptation of ICTs Personalization and adaptation technologies are that group of ICTs, which are used in the design and development of 'end-user-computing' to make the environment user-centered. Adaptation is the process of modifying the learning environments in the support of learning processes (Nawaz et al., 2011a). While personalization technologies range from simply displaying the user-name on a web-page, to advanced navigation and customization according to the rich models of user behaviors (Nawaz, 2011). It is generally recognized that effective and efficient learning need to be individualized, personalized, and adapted to the learner's preferences, competences, and knowledge, as well as to the current context. Adaptive learning systems keep the information about the user in the learner model and thus provide adaptation effects on the digital environment (Nawaz, 2012b). c) From Teacher to Student i. Teacher-Centric ePedagogy As learning shifts from the 'teacher-centered model' to a 'learner-centered pedagogy' the teacher becomes a facilitator, mentor and coach with primary task of preparing students in asking questions, formulating hypotheses, locating information and then critically assessing the information in relation to the proposed hypotheses (Qureshi et al., 2009). For example, new hypermedia applications are offering individualized and learner-centered delivery systems because these are the quickest way of acquiring knowledge (Kundi & Nawaz, 2010). If ICTs are used correctly they can assist in adopting a more people or learner-centered and dialogical approach to education through a meaningful two-way communication between teachers and learners (Nawaz & Qureshi, 2010b).

ii. Student-Centered Learning-Environment

The learner-centered approach derives from the theory of constructivism, which argues that knowledge is neither independent of the learner nor a learner passively receives it, rather, it is created through an

The emergence of networking, Internet, intranets, extranets, web 2.0 and social software have created an integration of user-friendly ICTs, which not only help in automation but also offer socializing tools to conduct collective activities like group decision making, group learning and interactions at the international level at anytime from anywhere (Phillips et al., 2008). Thus, it is the technologies themselves which are changing the work environments because users design multiple uses of ICTs only when technologies emerge. For example, video conferencing naturally forced the individuals and organizations to socialize without physical interactions, thereby introducing a technology-based group interaction with the feelings of physical involvement while all this happens virtually **??**Nawaz & Kundi, 2010a).

active process where a learner transforms information, constructs hypothesis, and makes decisions using his mental models and ultimately give meaning and organization to individual experiences (Nawaz & Kundi, 2010c). The use of ICT in education offers more studentcentered settings, which are constructivist in nature due to their provision and support for resource-based, student centered settings and by enabling learning in a context (Nawaz & Qureshi, 2010b). As internet is offering new ways of connecting and networking people, educators are learning to use these technologies to create and enable learning-communities (Kundi & Nawaz, 2010).

14 DISCUSSIONS

Research tells that education is the biggest user of software and web services showing that eLearning is widening the picture of education (Baumeister, 2006) thereby creating several stakeholders including knowledge-industry, academia, designers, policy makers and other institutions involved in ICT-based higher education (Nawaz et al., 2011d). The knowledge revolution and economic globalization has created knowledge-based industries who work on the basis of computer-literate workforce thereby pushing the countries to restructure their educational system and incorporate digital literacy in their curriculum because eLearning offers a diversity of opportunities for both the teachers and students (Nawaz, 2012a).

The emergence of educational technologies is forcing educators to construct alternative theories for learning. The paradigm shift in HEIs refers not only to the departure from pedagogy to ePedagogy; it also characterizes the changes within eLearning environments for teaching, learning and administrative purposes (Nawaz et al., 2011a). This dimension of paradigm shift is described in terms of the progress from old-ICTs to new-ICTs in three stages of traditional-eLearning, blended-eLearning and contemporary virtuallearning. The technological developments in eLearning are linked with the theories of learning like behaviorism, objectivism, and cognitive and social constructivism (Nawaz & Zubair, 2012b).

Objectivism believes that everything related to learning is predictable therefore there can be one universal eLearning model wherein priority is given to the stimulus-response relationship while cognitive aspects of learning are ignored (Kundi & Nawaz, 2010). Constructivism, on the contrary, argues that reality does not exist out there objectively rather it is constructed by the human beings subjectively therefore it is not predictable in total rather most of it depends on human perception, which in turn draws the picture/image of reality (Nawaz et al., 2011d). The constructivism in higher education have been pushed by the emergence of universal connectivity through ICTs, which has enabled the masses to globally communicate and freely access the global knowledge resources through internet (Nawaz, 2012a).

V.

15 Conclusions

Social constructivism have become a reality in some parts of the world particularly the advanced countries while rest of the world is struggling at different levels of the trajectory (see Figure 1). The issue is multidisciplinary and needs to be addressed from all related dimensions. Furthermore, shifting from objectivism to social constructivism is not simply based on the willingness of the users rather several independent variables configure the transformation process independently. For example, existence of latest digital technologies is indispensable for creating social networks to implement social constructivism in eLearning systems.

However, as discussed across this paper, generation of social constructivism is not actually techno-centric rather human and social therefore 'digital literacy' of the users stands as the major determinant of any move for adopting eLearning systems. The experience shows that provision of digital gadgets is gradually becoming a minor problem and even the poorest states are now getting access to the digital devices. There are social, human, organizational and managerial issues which are more critical and daunting for the authorities responsible for eProjects anywhere including eLearning systems of higher education.

It can therefore be concluded that the only way to create 'eLearning environments' that are based on 'social constructivism' is focusing on the 'native research' and 'digital literacy' of users. Domestic research will highlight totally indigenous models of the problems as well as solutions for introducing latest digital technologies in the learning systems of higher [1] [2] [3]

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Figure 1: Figure 1 :

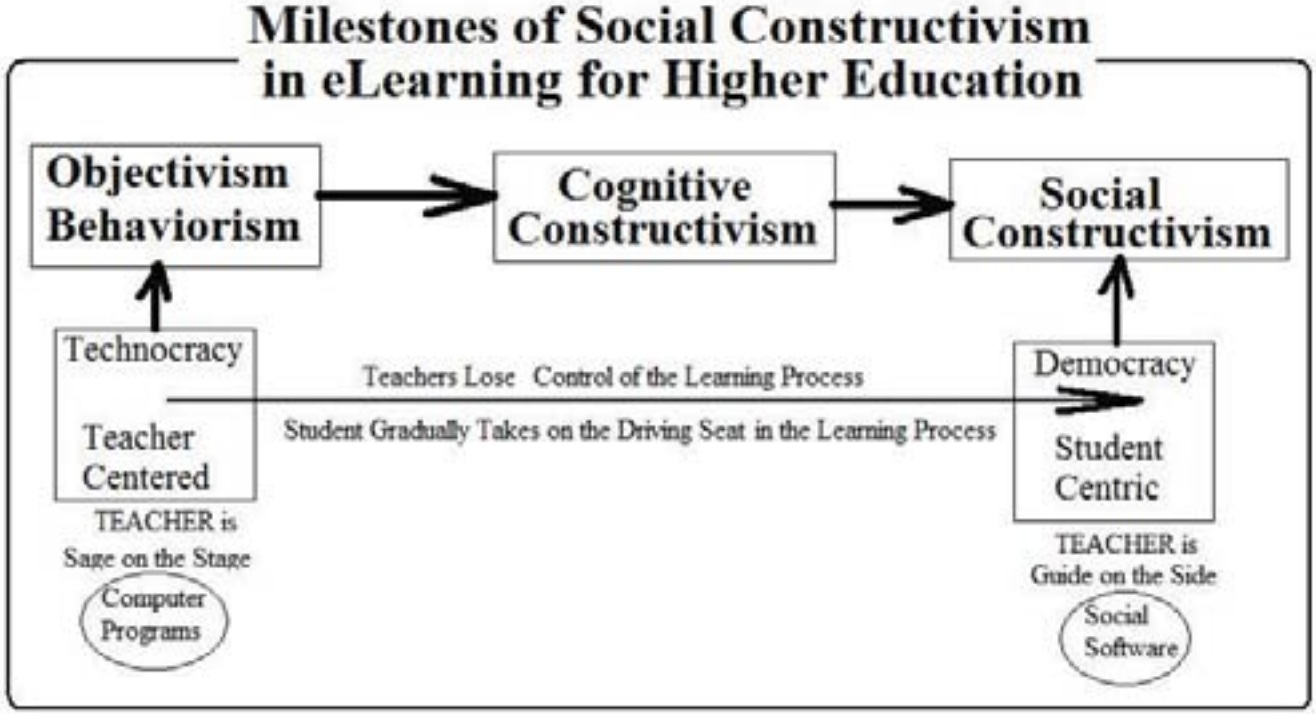

Figure 2:

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