TOWARDS BECOMING LEARNING ORGANIZATION IN THE AGE OF KNOWLEDGE SOCIETY: A CASE STUDY OF BEST PRACTICES AND LESSONS LEARNED

NATHEER KHALIF GHARAIBEH

College of Computer Science & Engineering at Yanbu, Taibah University, Saudi Arabia.
Email: ngharaybih@taibahu.edu.sa

Abstract

Knowledge society in Saudi Arabia is in the progress and its society is getting ready to play a crucial part in the global drive for educational excellence. Knowledge society pose a difficult challenge to the Colleges to apply Learning Organization best practices. To make Knowledge Society rather than desired, the researcher applied action research which is conducted starting from the academic year 2015-2016 till now. The research reported in this paper outlines the important theories directly relate to Knowledge Society and Learning Organization, in addition it investigates the Best Practices and lessons learned by this Emerging College in its journey towards becoming a knowledge Organization and create a deeper knowledge about the theoretical frameworks on the implementation of Knowledge Society concepts.

Keywords: Knowledge Society, Learning Organization, College of Computer Science & Engineering at Yanbu (CCSEY), Social networking, Web 2.0,   actor-network theory (ANT), communities of practice(CoP) , Action Research.

1. INTRODUCTION

The term knowledge society is often used interchangeably with Knowledge Based Economy. Saudi Arabian knowledge society [1] is in the progress and it is getting ready to play a crucial part in the global drive for educational excellence. A knowledge society is typically described as a group of people who share interests and attempt to apply their collective knowledge [2], This broad term may exist on a number of scales, including the global, national, or cultural systems, social organizations like professional societies, and local communities. In this paper the researcher will begin from the last two levels, which is the smallest, represented by a given example of a University College: College of Computer Science & Engineering at Yanbu (CCSEY), this paper belongs to a longitudinal research program initiated by the researcher during the academic year 2015-2016, when the researcher participated in updating the Strategic Plan of the CCSEY. At the beginning of 2015, CCSEY started deploying its Strategic Plan, and concentrated on applying Knowledge Society concepts

The knowledge society presents a challenging task for educators and decision-makers. There have been established several notions. Lifelong learning, distant learning and learning organizations [2] in addition to project-based learning (PBL), digital divides; and so forth. In this paper the researcher will apply Learning Organization best practices, there are also different synonyms for this term, such as knowledge Organization, and knowledge-based institution [3].

The need for transformation into learning Organization, has its roots in the global changes and the need to reach competitive advantage. The literature proposes various solutions to the problem of implementing learning Organization [4] [5] [6] , all of which share at least two factors, namely, attention to activities and processes performed in the organization and the state of mind of the staff and management. So, the research presented in this paper is the intersection between organizational development, the best practices and the daily activities conducted by CCSEY starting the academic year 2015-2016 till now.

The empirical data that forms the basis of this paper comes from meetings, seminars and observation conducted by the researcher, the study applies a range of social theories such as Actor-Network Theory, the critical mass of knowledge society, Theories of learning such as Wenger's theory of communities of practice. These theories were utilized in conjunction with contextual analysis, tracing the emergence of the explicit socio-technical conditions, within which the Learning Organization has been deployed.

To get insight into the transformation process of CCSEY into Learning Organization, action-oriented research has been used as a research method in this paper, based on the overall research question: What support does an Emerging College need in becoming a Knowledge Organization. This case study describes the lessons learned by this Emerging College in its journey towards becoming a knowledge and learning Organization. Extant research on the implementation of Knowledge Society concepts in organizations operating in the Academic sector posits a range of lessons learned that are correlated with successful KS implementation.

The paper is organized as follows: section one provides some background information on the main concepts of the paper by introducing relevant terms and definitions, Section 2 illustrate the research model and design artifacts used in this paper. Section 3 shows the theoretical framework, outlining important theories and models that will form the foundation for several concepts that directly relate to Knowledge Society and Learning Organization. Whereas section 4 describes the best practices and the daily activities conducted by CCSEY. Finally, section 5 draws conclusions and limitations of this research that are discussed along with some points on further research.

2. RESEARCH DESIGN AND METHODOLOGY

Traditional positivism research methodologies usually pit quantitative reasoning against qualitative intuition and regard it as unrelated to the research process. According to Senge [5], the systems approach is the key to merging intuition and reason since intuition is capable of seeing patterns, making parallels, and coming up with innovative solutions that go beyond the limitations of linear thinking.

The Research Methodology in this paper stems from the view of Systems science, Soft systems (or soft systems methodology) and systems thinking, which are methodologies used for systems that cannot easily be quantified, especially systems that involve people, Systems thinking, and the action research cycle play complementary roles [7]. Action research using a systems perspective creates provisional interpretations as the story develops. These justifications serve

as a rough framework for articulating the system's components so that they can be understood and, when necessary, changed through interventions. Diagrammatic representation is a highly helpful tool for developing systemic explanations, as shown in figure 1. This viewpoint is more likely to be adopted if the research question is posed by someone who believes that they are autonomous, responsible individuals acting in a life world of human relationships and interactions [8].

2.1 Problem statement

Transformation into Knowledge Society is not just simple and outdated task, therefore the researcher will take this topic from different multicultural and interdisciplinary perspectives, by looking at the intricate connections between technology, knowledge, and society. The research took place in Yanbu AL-Bahar, which is located in the mid-west part of KSA (In the Province of Madinah), where also Royal Committee of Yanbu is located in the Industrial City of Yanbu, about 25 Kms far from Yanbu AL-Bahar. In this region the Petrochemical companies such as ARAMCO and SABIC are dominating the business market, which means at first glance that the Graduate students of CCSEY who are specialized in ICT will not find the suitable careers. This was the main problem which require strategic and planned actions.

2.1.1 Case Study Selection

Using a case study as a research method is considered as an empirical enquiry that investigates a contemporary phenomenon in the context of real life, "especially when the boundaries between phenomenon and context are not clearly evident" [9] . In this paper the selected case is CCSEY , as the researcher (who member in the teaching staff and participating in several Administration activates), it has been noticed that CCSEY suffer from the lack of equipment, devices, educational and service facilities, in addition to limited freedom of decision making due to the centralized nature of the Taibah University managerial system , in spite of that he started collecting empirical data through meetings, seminars and observations, since 2015 , many issues were emerged, and resulted in some of the evidence items being strongly supported which reflected the big difference between the former and the latter situations.

2.2 Adopting Methodology of Action research

An action research strategy was adopted primarily for the following reasons:

1- Action research tries to address both the immediate practical needs of individuals in challenging situations and by working together within a mutually acceptable ethical framework to the goals of social science [10]. Positive researcher mediation encourages participation, cooperation, and information sharing among the organization's members, which helps the researchers better grasp the context of their observations.

2-The researcher, the participant students and Staff members generate several activates through cooperative communication methods in which the contributions of all members were valued [11]. Starting from selecting the **Student Advisory Council** (SAC) representatives through elections and through knowledge and experiences gained by those students in developing real life KS practices, which contributed to transforming CCSEY into learning Organization.

The responses and feedback loops received from the SAC students gave the researcher an insight about the problems faced. In turn the researchers help the students to improve the understanding of the KS practices. It is significant to recall that in action research, involvement is viewed as a strategy's flexibility rather than a violation of validity [12]. The knowledge acquired during the study proved that it was essential for the researchers to act as an advisor to the Staff members and as a supervisor to the students.

3- In order to link between a method and a theory, The methods used by interpretive researchers to analyze factual evidence, create interpretations, and develop hypotheses vary [13]. For example, those applying grounded theory go into a field study without a theoretical model and derive theory inductively from data, that is, however, an action researcher can begin by putting a theoretical model into practice (e.g., an Actor-Network Theory) and through actions and Learning cycles update the model and generate supporting empirical data. Similarly, in this paper empirical data will be analyzed from a particular theoretical perspective, thus resulting in theory-informed interpretations.

2.3 Empirical data

The empirical data that forms the basis of this paper comes from meetings, seminars and observation conducted by the two research partners, the first Author as the dean of the College who is responsible for the strategic change, and the second author as one of the main participants in the change process. The data is collected in an action-oriented manner with a focus on the research partner's needs, problem and presented ideas.

In the cyclical learning process of action research, reflection is crucial. After interviews were conducted with the students' reflections were made. The analysis of the reflections is necessary to understand the problems faced by the students, and to make suggestions to facilitate the learning process.

2.4 Research Contribution

The aim directed to the research partners is to support CCSEY in becoming a learning organization and to create a deeper knowledge about the theoretical frameworks and the research methods used. The study contributes to the limited literature on exploring the opportunities and practices of how educational institutes will enforce knowledge society in Yanbu Branch, since little is known about the impact of Taibah university colleges on knowledge society in Yanbu AL-Bahar.

Some efforts can be traced through the College Web Site , because "Journaling is an important mechanism for learning to reflect on and gain insights into your preunderstanding" [7] , Since 2015 the researcher has presented all the news on the College Web Site based on the intervention and activities carried out in CCSEY. Vast majority of these actions are the foundation of this paper. Although in this paper there are one author, but these efforts belong to the Whole team members of CCSEY.

2.5 Research Model

To provide a working definition of the relationships between the various Concepts and theories used in this paper, a research model (Figure 1) was constructed to give a clear picture of the components that the research examined.
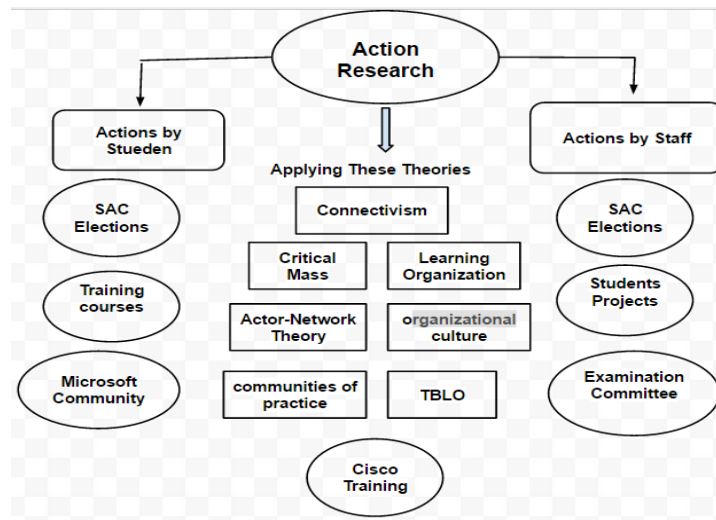

Figure 1: The Research Model

3. THEORETICAL FRAMEWORK

Various theories from the Knowledge Society and the Learning Organization will be presented in this section. These theories should serve as analytical lenses and give rise to several notions that might connect the problems with developing or establishing a more successful learning organization in a knowledge society environment.

To live in the age of knowledge Society, organizations [14] have firstly establish an organizational culture that values trust and knowledge sharing. To proceed more specifically, companies must develop an acceptable knowledge infrastructure (an appropriate communication channel), looking into the case of action teams, which operate as Critical Mass or CoP within an organization, and which are made up of individuals with specialized skills who must deal with unpredictable situations and the ability to change.

3.1 The learning organization

The main point of this paper is that organizations must adapt and change to survive [4]. The concept of learning organization was studied by many scholars for instance Senge, Argyris and Schön and many more. It is closely connected to knowledge Organization, knowledge-based institution and organizational learning, all these concepts are related to Organization development, which is the procedure through which a company builds its internal capabilities to carry out its mission job as effectively as possible and to survive in the long run. [15].

One of the most widely used definitions of organizational learning is the capacity of an organization to learn from experience through observation, analysis, experimentation, and a readiness to look at both successes and failures[16]. Organizational culture and Team Based Learning are key concepts in organizational learning.

Peter Senge [5] list five essential disciplines that should be taken into account to transform into learning organization: personal mastery; mental models; shared vision; team learning and systems thinking. In his book, Senge shows many ideas connected to these five key disciplines: "reflection; transformation; learning; expand capacity; sustainability, employee involvement, shared values, and open dialogue". accordingly He give this definition [17] for the learning organization:" organization that continuously transforms; continually expand its capacity by continually learning activities in order to reach sustainability in an ever changing market. Team learning and building shared vision activities are related to employee involvement, understanding of shared values and a free flow dialogue".

3.2 Organizational culture

According to Schein [18] culture is the most difficult organizational attribute to change, he Organizational culture is defined as a set of implicit beliefs held by group members that influence how the group acts and reacts to its environment.. As shown in figure 2 , which shows the difference between the "visible/formal aspects of an organization (systems, structures, policies, technologies) in the upper half, and the hidden/informal aspects of an Organization (attitudes, beliefs, values, and perceptions) in the lower half below the water line" [19].

The difficulty come in the informal part of the culture, This require Developing a kind of story telling ability , That stories are told in organizations and used in many ways, including [20] the inculcation of organizational culture and , transmitting values, sharing knowledge, and could be used to influence member behavior.

In emergent and new College, Stories are a convenient approach to quickly introduce new group members to culture and traditions. Further the use of stories to illustrate and communicate intricate, multifaceted concepts can be quite effective. A well-crafted, well-told story may convey knowledge and feeling, the explicit and the tacit, the core and the context [21] [22].

This issue will be discussed in 4.2, in which News reports was first published as structured stories in the formal website, then inform vast majority of CCSEY community, by creating social networks and time-based feeds rather.
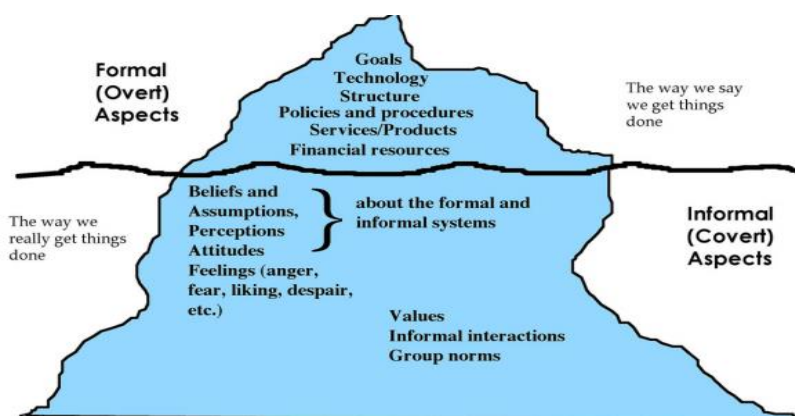
Figure 2: Herman's iceberg model [19].

3.3 The idea of Critical Mass:

Because we are working with a Problem of an empirical basis, we can apply critical thinking by assuming that specific components within a problem context are most crucial to the solution. For example, according to the well-known empirical Pareto Principal Pareto's Law implies that 80% of problems occur from 20% of causes.

In the KS literature, this percentage is known as Critical Mass [23], those skilled and highly qualified individuals, those people who can lead the change. Universities in developing countries, may have to work closely with governments and donors to turn an idea or technology into a level where it is mature enough to be applied directly by its industries, in this paper Critical Mass is supposed to accelerate the bootstrap growth of learning activities in this college.

3.4 Actor-Network Theory

While action research, is concerned [24] with emancipation of the researcher or practitioner and focused on making us better at developing learning organization. Nevertheless, ANT may provide us with the detail to understand the success or failure of a particular innovation. Through ANT this paper aims to comprehend how learning and learners are viewed as network effects, as well as the function of human and non-human actors in the building of the actor-network.

The researcher doesn't claim that he will use ANT in this paper , instead , as this paper copes with a subject of KS ,ANT must be mentioned for further future research proposals , It is worth to mention Work of Peter Berger and Thomas Luckmann's about The Social Construction of Reality in 1966 [25], which was then developed through the work of Searle in 1995 about the social construction of institutions. In this context come Actor-network Theory as an Alternative to Social Construction because we are starting with problematic and realistic situations rather than just mental problems. So that an embedded design methodology would therefore be preferred , It would aim to strike a balance between participants' and stakeholders'

contextualized local knowledge on the one hand, and general facts and practices on the other [26].

Thus, ANT on its own, might not offer sufficient explanations as to why the actors under study take particular actions and why some actors are excluded or marginalized from the innovation process, therefore it is very important to combine ANT with one well known learning theories, in order to provide rich understanding of the social learning processes in CCSEY.

The four most popular theories that are frequently cited [27]: Kolb's model of experiential learning, the theory of double-loop learning by Argyris and Schön, , Nonaka and Takeuchi´s theory of knowledge creation and Wenger's theory of communities of practice, The later will be used in this paper.

The most crucial factor in selecting the suitable learning theory is how to convert actors into agents of change, ANT does not provide importance of identity, and in other words, actor is not here to play the role of agent as network playing the role of society. ANT is a theory of relations and connections that include humans and non-humans. Whereas CoP are theory of learning, Therefore combine [28] between ANT and CoP will utilize both reificative and participative aspects . In doing so, several concepts emerge which stretch some of the key tenets of each theory. Further CoP fits more in situated learning. In which learning is embedded within activity.

3.5 Wenger's theory of communities of practice

Communities of Practice (CoP) represent the idea that Groups of people who come together based on common identities or shared ways of doing things, in which learning is the result of legitimate peripheral participation in communities of practice, in other word, it is social process whereby knowledge is co-constructed; and situated in a specific context.

Even if CoP belonging to a different research context (social anthropology), CoP [29] has also been widely applied to understand networked learning and it shares several similarities to the ANT. It is distinguished from ANT as it is an example of a socially situated learning theory where "learning is seen as social participation and consists of four aspects: learning as community, learning as identity, learning as meaning, and learning as practice". This is done by collecting peripheral participants in a community

3.6 PBL and TBLO

It has been demonstrated that project-based learning (PBL) helps a range of students improve their collaboration abilities. For instance, PBL taught students how to comprehend many points of view and how to resolve conflicts. PBL also calls for team-based learning [30]. Team based learning is one of Senge's five key disciplines [5] need to be considered to transform into learning organization, it initially promoted the idea of "learning by doing" of john dewy. It is related to the Team Based Learning Organization (TBLO), which was stressed by many scholars like Senge, Argyris and Schein. In CCSEY experiment, the idea of TBLO has been used in creating interactive team staff, the values of trust [31] and Knowledge-Sharing have

been supported, together with CoP leads CCSEY to establish important partnerships, through the concept of **Corporate Social Responsibility**.

3.7 Corporate Social Responsibility

Over the past 20 years, the field of corporate social responsibility (CSR) has expanded significantly. Compared to the past, many firms are now more engaged in giving back to society. Businesses are responding to this need by promoting CSR and sustainable development initiatives, which take a long-term perspective and integrate social, environmental, and economic concerns. The growing importance of the Knowledge Society and compliance for various industries has created an evident need to provide supporting tools and methods to enable organizations seeking compliance.

Two major projects with Cisco and Microsoft have started as part of the CCSEY trial thus far. Microsoft's Unlimited Potential program and Cisco's Networking Academies are two examples of companies working with education partners throughout Saudi Arabia to improve ICT skills and training to prepare young people for the 21st century Knowledge Economy. Both initiatives fall under Corporate Social Responsibility divisions in both Cisco and Microsoft.

4. THE PRACTICES AND ACTIONS

Having provided an overview of the main theories used, in this section an effort is presented to identify where and to what degree the earlier discussed ideas and frameworks for understanding actions, networks, and communities in CCSEY as an evident from the evaluation standpoint.

During the **first stage** of the research, the Idea of Critical Mass and ANT was employed to investigate how a group of elected students (actors) aimed to promote participation in the online social networks, by developing different strategies to attract CCSEY students to participate into the College networks. And how those students contribute to transform CCSEY into learning Organization.

In the second phase of the study, findings from CoP were applied to a deeper examination of the ways in which practices influenced engagement in the online community. This analysis demonstrated that factors influencing involvement included the relationship between TBLO and PBL practices and other CCSEY practices; the sense of habits reflected in these practices leads to make a partnership through CSR programs with corporations Cisco and Microsoft, or even to sign agreement with Yanbu Province.

4.1 Elections of Student Advisory Council

To reach this critical mass, The CCSEY students were encouraged to choose their representatives in **SAC** members. Researcher with help of his colleagues conducted student elections to select the most effective students, who could be change agents. Through developing SAC members together, communication and interaction amongst the SAC members were promoted and improved at an early stage. For the research of team cohesiveness and communication, it was crucial to monitor this element of team formation.

4.1.1 The Role of Sac in Training

After selecting the Critical mass, an Actor-Network is formed between these students depending on the connection with not only with the Formal Web Site of the College but also by creating more reachable Informal Social networks. This issue will be expressed in this section. Similar to any social network, this self-organizing, and emergent pattern arises as a result of the system's constituent parts interacting locally, indeed those selected students began to perform many activities, these activities ranges from conducting training workshops in technical subjects to more interactive seminars concerning Preparing Graduates for the Labor Market. To achieve these activities, they bring financial support from the Students Affairs Deanship at the University, further they found many sponsors from Yanbu who could organize these workshops in attractive and Hospitable places. These workshops were first promoted through interactive communication process through the social networks, in which the students enters into electronic voting process to select the courses, as we will show in section 4.2, the conducted workshops included: Nature photography, Technical Training courses (Microsoft .Net, Web Technologies, PHP, Cisco networks, etc..), Project Management Professional (PMP), Data Science, how to use Digital Libraries and many others. Further the SAC members engaged in the main CCSEY activities, for example, they solve the problem of registration at summer semester through building a friendly user interface connected with a local database, they participated effectively in the managing graduation party and cooperate with the college in organizing students visa cards, the students did all these activities and many more on their own without much interference from administrative staff.

4.1.2 The Role of SAC in Preparing Graduates for the Labor Market

Considering the crucial role that education plays in the labor market and economy, nations are reviewing their systems for workforce development and education. The necessity to create a knowledge society that can handle the challenges posed by technological transformation and globalization was highlighted in the 2010–2011 Arab Knowledge Report. Strategies for enhancing human capital are already well-established in the area [1]. Saudi Arabia as the main country in the region, ensured and enhanced the graduate's participation in the labor market, it was found that the largest number of students still prefer theoretical specializations of which the labor market has saturated. The unpopularity of science and engineering as a choice major for college students constitute a major constraint in this connection, since public sector still attracts a massive portion of national workers while the private sector concentrates on attraction of expatriate labor due to the difference in the level of compensation and working conditions. In accordance, one of the main goals of SAC is breaking the barriers between the graduate and labor market to start work enthusiastically, making private sector jobs more attractive to the youth (higher unemployment benefits or other incentives). SAC coordinated with Royal Committee Industrial College and conducted workshops to qualify CCSEY graduates for the Saudi labor market. The training aimed at acquiring the most important basic knowledge which is related to Labor Market. Also, developing the graduates' skills to practice their works with high efficiency and making a positive change in their directions, method of thought, propositions, behaviors, and styles.

4.2 Formal Web Site and Informal Social networks

A questionnaire about Web site audience was distributed to students' college, the analysis shows that the failure of the Formal Web Site to establish trusting relationships with students, unactive processes between human actors and the Web site were one of the most important causes of low participation. To spread organizational culture and fill the gap, the researcher solicited the students to create social network sites (SNS), such as Twitter, Facebook, Instagram, and YouTube, this gave everybody the chance to function as a journalist and provided options to close this gap. News items are frequently published as business reviews and time-based feeds across various SNS as status updates, photos, and YouTube videos. Separations can also be made between Web 2.0 storytelling through SNS and that of Formal Web sites. Social networking, blogging, and YouTube Showed its better in interactivity, providing a network of links for web 2.0 storytelling goes beyond the conventional and linear flow of digital narrative of the less interactive Formal Web site of CCSEY.

4.3 Team Based Learning Organization (TBLO)

Following the steps of Forming, Storming, Norming and Performing[32] ,started from Critical Mass for selecting the students and Team Based Learning Organization (TBLO) for creating interactive team staff , the team organized itself into several committees , including the following subsections. Each has been selected according to the specialty of its members.

4.3.1 Developing the staff Team for Cisco

To increase the employment opportunities and aid in the advancement of its graduates' careers, CCSEY accepted the Cisco Networking Academy curriculum. Under the supervision of the CCSEY team, the program has become a training ground for the workshops that is given to many trainers, for both inside CCSEY and outside from the surrounding community.

4.3.2 Examination Committee

Further the Team of CCSEY helped in the finishing of examination process of the Distance learning for thousands of students in Yanbu Branch – Taibah University, when they were a lot of disorder problems in thousands of exam papers and students lists. The team deals with this problem as project because [32] it was temporary endeavors undertaken in a definite beginning and end. The problem has been solved by applying an agreed flowchart between the team members, tracing the document flow for the many forms, and then applying excel program written in VBA to generate ordered students lists. These collaborative efforts helped in accomplishing the process in efficient and effective manner.

4.3.3 Students Projects

The cyclic learning process of reflection is crucial to Projects evaluation process. Reflections were made after each committee meetings, some of these meetings were conducted with the students to inform them about the evaluation process. To comprehend the difficulties the students are experiencing and to offer solutions to speed up the learning process, analyses of the reflections are required. To benchmark the evaluation process, the committee made part of the project's evaluation more quantitative, they Solve the conflict between quantitative and

qualitative methods in Projects evaluation through moving from single loop to double loop , then triple loop [4] and get the context , the committee conducted 5 meetings to trace the progress of the evaluation process until they finally reach to the suitable evaluation criteria.

5. CONCLUSION AND FUTURE RESEARCH

The major conclusion from the research is that: the major benefit of using Knowledge Society and Learning Organization Concepts during the research is that it serves as a communication catalyst and as such it supports both interpretation of the gathered data and the intervention together with the research partners, there are indications that visualization/graphical modeling supports a small and medium sized enterprise in becoming a learning organization.

Hence, University Colleges need to understand and consider such influences if they are to successfully implement Knowledge Society and Learning Organization Concepts in addition to the Best Practices and lessons learned by this Emerging College in its journey towards becoming a knowledge Organization. Creating a deeper knowledge about the theoretical frameworks on the implementation of Knowledge Society concepts needs further research not only qualitative but also quantitative research

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