Qualitätsmanagement in Online-Universitäten

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Quality Management in Online Higher Education

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Abstract

In this study the aim is to introduce a system for managing quality in an online university. After exploring the literature regarding distance education (in general) and online universities, along with various aspects and features of managing quality in educational institutes, a model of essential components of a university with emphasis on online features, is illustrated, introduced, and discussed in detail. Then, *a chain process model*, is designed to indicate the main phases for providing a teaching-learning environment by designing and implementing a program in an online university. For each phase, various vital tasks and their indicators are defined, and based on these tasks and assigned indicators, a measurement table is designed with the aim to provide a method to estimate the quality in an online university and demonstrate the concept of quality via a model of quantitative measurement. For further studies regarding the managing quality in an online university based on this study, first, these designed models and the measurement system associated with them should be executed in an online university. Then, they could be modified and improved based on the outcome of a process of receiving feedback and evaluating the collected data and information.

Key words: *quality, quality management, online university, model*.

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List of Acronyms:

AACSB: Association to Advance Collegiate Schools of Business.

ACRL: Association of College and Research Libraries.

ADDIE: Analyze, Design, Develop, Implement, Evaluate (known as ADDIE model).

ALT: Academic Technologies for Learning.

CDL: Center for Distributed Learning.

CMS: Course Management System.

DE: Distance Education.

HRM: Human Resource Management.

ICT: Information and Communication Technologies.

ISD: Instructional System Design.

IT: Information Technology.

OECD: Organization of Economic Cooperation and Development.

PI: Performance Indicator**.**

RIT: Rochester Institute of Technology.

TA: Teaching Assistant**.**

TQM: Total Quality Management.

UVU: Utah Valley University.

Quality Management in Online Higher Education

Rapid changes in technology have changed people's life significantly almost all over the globe. We have new gadgets, apps and consequently a new life style. As a part of these changes distance education, also, has changed thoroughly. Nowadays, we use instructional technology in universities, and universities are able to provide a teaching-learning environment for their students from another continent. However, we see lots of changes in distance education and have more online universities in the world. We need to keep in mind that distance education is, at its core, *education* and by having only new technology in education we cannot achieve quality in education as well. For providing distance education in universities with high quality, we need to define quality and find the best indicators for managing it.

In this research, I try to find a suitable framework and related indicators for managing quality in online universities. The main objective here is to develop a framework based on other quality management models and frameworks in education systems, especially in universities- existed in literature and define the main indicators for it.

For the first step, and as the literature review, I start with discussing various aspects of distance education (theories, concepts, conceptual frameworks, history, etc.). Next, higher education components and models, along with the concept of quality in higher education, would be examined. After reviewing the literature regarding the main elements for quality management in universities in general and distance education in particular, a framework for examining the main components of higher education teaching-learning system – by emphasizing on the distance education feature of this system- would be discussed, then, a chain process model with its indicators and a measurement system for managing quality in an online university would be introduced. In the last part, I try to investigate the usefulness of the introduced *chain process* *models* and its indicator system by conducting a small survey and discussing its results. Hence, this study examines a new model and indicator and measurement system for managing quality in an online university.

1. Literature Review

There are many reports about the rapid growth of distance (online) education in the world (for example, see: Allen & Seaman, 2007), along with researchers' interest on examining this subject as well. The fact is that today and in the modern world, the advancement and progress in the societies is, mainly, related to education. More and better education in a society means better opportunities with more social and economic advancement. Increasingly, more people today are looking for better education and demanding it, while providing suitable and satisfactory education through education institutions is not an easy task. In different countries and societies, there are many barriers for providing education for everybody, for example in countries with a low rate of population scattered all over within a harsh environment, such as Finland, providing education for this small population would be a problem. Thus, there is a high demand for better and more education, while, there are many economical, environmental or even social barriers for providing it. A good solution for removing these barriers is to establish more distance education institutes, and with new technology, online education has been a suitable solution for this increasing demand.

On the other hand, we need to be sure that by changing the tools and methods in education (such as in distance education) the quality of education stays intact, and students can get the same high quality education provided by educational institutions via new methods and tools. It, also, is true that while managing quality in manufacturing is an obligation these days, gradually the service sector adopted this concept as well, and as a result, the education system - as a part of the service sector- is trying to find the best methods and techniques for managing quality in different education systems. Brown & Duguid (2000) argue that significant changes in competition have made higher education institutes think like businesses, and the education markets are becoming global, while, the universities try to attract more international students as a response to a rapid increase in demand of the stakeholders, and to changes in technologies. Therefore, many universities have adopted a new paradigm of *online distance education,* which merges conventional distance education with telecommunication technologies and computers (Brown & Duguid, 2000, as cited in Na Ubon & Kimble, 2002).

1.1. Why Distance Education (Distance Education and New Opportunities)

Distance education has opened up many new opportunities in teaching and learning for many people. Distance education means that access to education can be provided easily with more and better learning opportunities for more people. In many cases, a disadvantaged population, such as people who live rurally and in the city, can study in the same institutions with the same faculty that in the past only people in privileged and mainly suburban areas could study. Moreover, handicapped and disabled students - even when they are homebound or institutionalized- can study in the same programs and courses that the normal students do. Adults who are working can take courses for basic skills or career enhancement without needing to go away from their job or home. Students in one country can study in other countries' institutes with other students. In distance education, programs and courses can be accessed from almost any location whenever the students want to complete it at his/her proffered pace (Moore & Kearsley, 2012).

Moreover, in distance education students have a greater degree of freedom and control over the relations with their teachers. It is a revolution in education, as now it becomes more apparent that teaching no longer drives learning, instead teaching supports learning and responds to it. Therefore, with such opportunity and freedom, students must accept more responsibility towards their learning, and it means they need to seek out information and resources, when they will study and how much they want to learn. By adopting distance education, institutions face changes as well. In distance education teachers need to learn how to use technology and new methods of teaching at a distance with the different interactions they have with students, managers need to learn how to manage this new environment, and even administration needs to do things differently. Therefore, there would be no geographic boundary in the future of educational systems (Moore & Kearsley, 2012).

As a result, distance education can be seen as both, a result and a cause, for significant changes in our understanding of the very meaning of education itself.

Regarding the reasons for an institution to start online programs, Moore and Kearsley (2012) mention a few of them as:

- As a matter of equity, distance education would increase access to training and learning;
- Distance education can provide opportunities for the workforce for updating their skills.
- Distance education improves the cost effectiveness on resources.
- Distance education can improve the quality of existing educational structures.
- In the educational system, distance education enhances the capacity of it.
- Distance education brings balance inequalities between age groups.

- In distance education, the educational campaigns can be delivered to specific target audiences or, for key target groups, the emergency training can be provided.
- In new subject areas, distance education can expand the capacity for education.
- Distance education offers a combination of education with family life and work.
- Distance education adds an international dimension to the educational experience (Moore & Kearsley, 2012).

Also, Moore and Kearsley (2012) talk about the institutions in which distance education is a part of their education system. They categorize them as distance education in:

- "For-Profit" Schools.
- Colleges and Universities.
- Strategic Alliances, Consortia, and Networks.
- The K-12 Schools.
- Corporate Training.
- Military Education.
- Continuing Professional Education.
- Course-sharing Initiatives (Moore & Kearsley, 2012).

So, it can be seen that almost in all types of education institutions, we can adopt distance education and enjoy its benefits and advantages.

1.2. Distance Education Definition

Na Ubon and Kimble (2002) define online distance education as teaching and learning activities which are formally and systematically organized, in which the instructor (teacher) and the learner (student) are geographically separated and they (student and teacher) are using

Information and Communication Technology (ICT) to facilitate their collaboration and interaction (Na Ubon & Kimble, 2002).

Also, computer-assisted instruction (CAI) is another important tool used in distance education. CAI is simply the process of using computer-based simulations or software programs for improving the educational process. Many different forms of CAI can be used as a replacement for traditional methods of instruction or simply in addition to them. There were two meta-analyses studies, during the 1980s, which showed CAI is an effective tool when it is an addition to traditional educational methods, and these days we can see more advanced CAIs which are used in various institutions for delivering education by distance (Allen, et al., 2004).

An important point, regarding the online distance education system, is that the mere presence of technology, different software, and communication tools would not create a learning environment, and these technologies are only tools and a means to carrying out the teaching-learning process (Na Ubon & Kimble, 2002).

In this regard, Garrison (1993) argues that in distance education one of the main issues, considering the learning and teaching process, is about overemphasizing the separation of teacher and students. It should be born in mind that *education* is the center of the distance education mode as well, and this separation can be seen as a physical, and as a result a methodological constraint (Garrison, 1993).

Later, Moore and Kearsley (2012) define distance education as:

"Distance education is *teaching* and *planned learning* in which teaching normally occurs in a different place from learning, requiring *communicatio*n through *technologies* as well as special institutional organization" (Moore & Kearsley, 2012, p.2).

It can be said that in all the distance education definitions by various scholars, the two main characteristics of distance education are described as the separation of teaching and learning environments and the existence of some mediums for connecting these two environments together for providing an educational environment.

Bates (2005) explains that however we use the three main terms regarding e-learning with the same meaning, there are significant differences between them found in the terms: *open learning, distance education,* and *flexible learning*. He says that one of the open learning's essential characteristics is the removal of barriers to learning, and this is an *educational policy* or *goal*. It means that ideally everybody can have access to an open learning program and no one should be denied this access. So, open learning is accessible and flexible. On the other hand, distance education is more a method of education and less a philosophy. Students choose the time and place for study without face-to-face contact with their instructor and teacher. And flexible learning is the delivery of learning in a flexible manner which is built around the social, geographical and time constrains of individuals instead of those of an educational institution. Flexible learning includes both distance and face-to-face education, and it is more a method than a philosophy, as well. Like distance education, flexible education is often associated with increase access and so more openness however, neither openness nor distance rarely would be found in their "purest" forms (Bates, 2005).

1.3. Distance Education History

Historically, the beginning of distance education began when courses of instructions were delivered by mail in 19th century. At that time, it was called correspondence study, in for-profit schools, it was called "home study", and in universities it was known as "independent study". It was as early as the 1840s that people could study at home or at work by getting instruction from "a distance teacher" by mail. This cheap and reliable postal service was, in those days, a new technology (Moore & Kearsley, 2012).

In Great Britain, the national postal system was used by Isaac Pitman, in 1840s, for teaching his shorthand system. Then, in mid 1850s, Charles Toussaint - a Frenchman - and Gustav Langenscheidt, a German, began to exchange language instructions, which led to the establishment of a correspondence language school. And, in the USA, Bishop John H. Vincent, who was also the cofounder of the Chautauqua Movement, in 1878, created the Chautauqua Library and Scientific Circle which offered a 4-year correspondence course of readings to supplement their summer schools held at Lake Chautauqua in upstate New York. Then, for higher education courses by Chautauqua Correspondence College (founded in 1881), for the first time, teaching through the mail was used. Around that time, also, in Scranton, Pennsylvania, the Colliery Engineer School of Mine offered a correspondence course on mine safety, and soon after that, because of this course's success, they began to offer other correspondence courses as well. This institute renamed itself the International Correspondence Schools in 1891. Then, many institutes started to have correspondence courses or programs, and there were over 200 proprietary correspondence schools between the 1890s and 1930s (Moore & Kearsley, 2012).

For the early correspondence educators of that time, the vision of using technology to reach out to those who were, otherwise, not provided for or deprived of education (which included women and working-class people) was the principal motive. Therefore, it can be seen that women played an important role in distance education history. Anna Eliot Ticknor, in 1873, established the Society to Encourage Studies at Home, and her purpose was to offer women the opportunity to study at home through the materials delivered to their homes, as, in those days, women were usually denied access to formal educational institutions (Moore & Kearsley, 2012).

Moore and Kearsley (2012) report that by the year 1930, there were 39 American universities offering correspondence teaching, and they quote Dorothy Canfield Fisher, who report that there were “about two million students enrolled every year in correspondence schools,… four times the number of all the students enrolled in all colleges, universities and professional schools in the United States” (Bittner & Mallory, 1933, p.31, as cited in Moore & Kearsley, 2012, p. 26).

1.3.1. Shifts in DE history- Driven by technology: Distance education Generations. Bates (2005) states that there are *three generations* of distance education. The predominant use of a single technology and lack of direct interaction between students and instructor are the characteristics of *the first generation*. This description fits educational television and radio, but the main form was print-based correspondence education. For the first generation, typically, reading lists of books and articles would be provided by a private company for the students to study independently. Tutors or instructors would be hired to mark assignments and give possibly feedback, and then, the students took a competitive examination from an accredited or recognized institution (Bates, 2005).

A deliberately integrated multiple- media “print plus broadcasting” approach is the main characteristic of *the second generation*. In this approach, learning materials specifically were designed for study at a distance, along with a meditated communication between students and a third person like a tutor or the originator of the teaching material. In the second generation distance education institutions, a very large number of students could be served, and *mega universities* is the name that Daniel (1996) calls those institutions with over 100,000 students (Bates, 2005).

The second-generation institutions used methods of mass production and delivery of standardized products, so, they are considered industrial in nature. The common features of these institutions are: highly centralized production and delivery, quality design of materials, large bureaucratic systems, very cost-effective results, and one-way transmission of information modified by independent learner activities aimed at student cognitive development. Some of the examples of the second-generation universities are the British Open University, the Anadolu Open University (Turkey), and Universidad National de Educacion a Distancia (Spain) (Bates, 2005). *Table 1* shows a list of some of these mega universities.

The Internet or video-conferencing is one of the two-way communication media that the *third-generation* distance education is based on, and the main characteristic of this generation is to enable teachers (who originate the instruction) and the remote students to interact. Moreover, another even more important issue is that communication is facilitated at a distance among students too, either as groups or as an individual. These technologies help for having much more equal distribution of communication among students and between teacher and student (Bates, 2005).

Some authors such as Campion and Renner (1992) and Farnes (1993) described the third generation of distance education system, as post-industrial or a knowledge-based system. In this system, course design, course development, and then course delivery is managed by small and relatively autonomous teams. Also, in third generation, often, but not exclusively, more constructivist approaches to teaching and learning, dependent on student dialogue and discussion, and relatively flexible Web-based administrative services, can be found. Another characteristic of the third generation of distance education is economics of scope; although, the operating costs can be substantial, these universities can provide quickly produced and customized courses for relatively low initial investment. The third generation distance education, often, can be found in dual mode institutions, as conventional universities with a distance education operation, and in some of the smaller training organizations (Campion & Renner, 1992, and Farnes, 1993, as cited in Bates, 2005).

Kaufman (1989) believes that we can see a progressive increase in learner control, opportunities for dialogue, and emphasis on thinking skills rather than mere comprehension in these three generation models. Moreover, he argues that the third generation leads to new types of organizations too (Kaufman, 1989, as cited in Bates, 2005).

While the rapid expansion of the Internet, and in particular the World Wide Web, is the main reason for the growth of the third generation of distance education, these changes are influencing conventional education as well, due to the fact that the World Wide Web allows digital materials to be created, stored, accessed and interacted with via the Internet, along with emails, bulletin boards and video conferencing. Although e-learning can include any form of telecommunications, computer-based learning and online learning means (specifically the Web and the Internet), these two terms (e-learning and online learning) often are used interchangeably (Bates, 2005).

Mainly, these are the three main generations for distance education, however, there are other authors who describe them differently. For example, Moore and Kearsley (2012) talk about five generations, as: correspondence, broadcast radio and television, open universities, teleconferencing, and the Internet/Web. In this view, the second generation has been divided into three generations. *Figure 1* shows the generations in distance education based on Moore and Kearsley's (2012) description (Moore & Kearsley, 2012). Anderson and Dron (2010) point out that "none of these generations has been eliminated over time", rather the selection of various options has been increased for both DE designers and learners over time and with each new generation (Anderson & Dron, 2010, p.1).

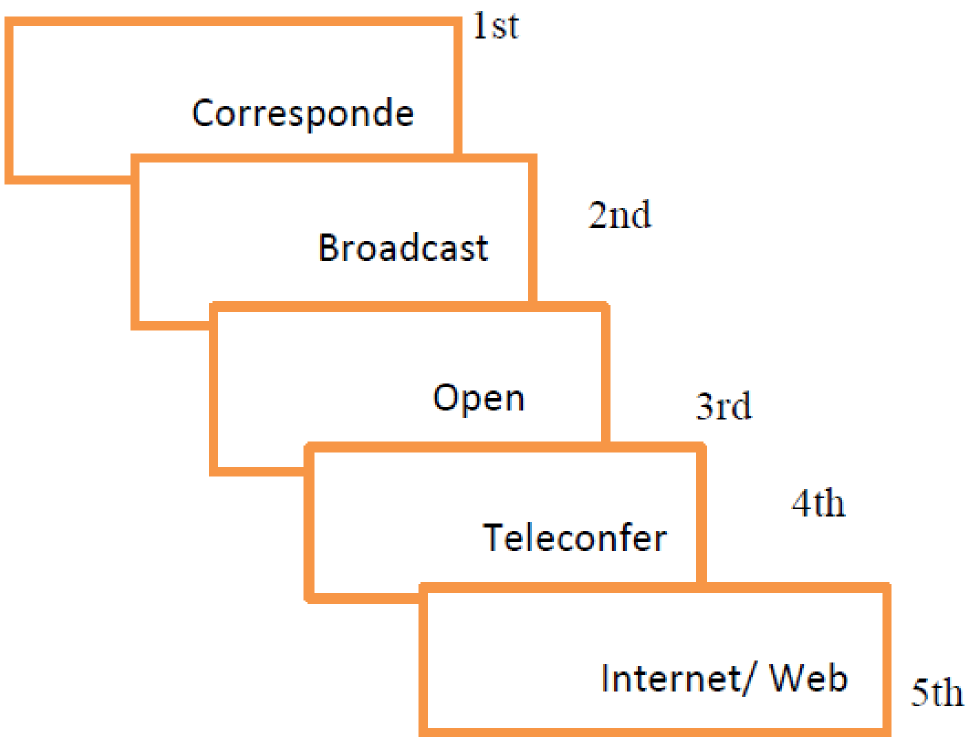

Figure 1. Five generations of distance education, (Source: Moore & Kearsley, 2012, p.24).

Table 1

Mega Universities (Source: From Wikipedia (2010) as cited in Moore & Kearsley, 2012)

Country	Institution	Established	Enrolment
Pakistan	Allama Iqbal Open University	1974	3.2 million
China	Open University of China	1979	2.7 million
Bangladesh	Open University	1992	600,000
India	Indirs Gahndi National Open University	1985	3 million
Indonesia	University Terbuka	1984	646,467
Iran	Payame Noor University	1987	183,000
Korea	Korean National Open University	1982	210,978
Spain	Universidad Nacional de Educacion a Distancia	1972	180,000
Thailand	Sukhothai Thammathirat OU	1978	181,372
Turkey	Anadolu University	1982	884,081
UK	The Open University	1969	203,744

1.3.2. Shifts in DE history- Driven by changes in theoretical approaches to learning.

For a long time, there has been a debate among scholars regarding how to categorize distance education. Some argue that distance education should be considered as a *discipline* and others believe it is only a *field*. Scholars, who see distance education as a field, state that in terms of the aims, activities, conduct and students, there is nothing unique about distance education, and it is similar to other fields of education. Although there is no agreement in this regard, one issue is accepted by everyone that the separation between learner and teacher is the main characteristic of distance education (Amundsen, 1993).

First systematic attempts to deal with distance education issues academically were done in Germany in 1967, when Dohmen published a paper in the German language, *Distance Education: A new field of educational research and activity*. And in the same year in Berlin, Otto Peters published another paper in this subject area, titled: *The didactical structure and interpretation of university distance education: A contribution to the theory of distance teaching*. Dohmen's work was the first researcher who published his theoretical formulation with 620 pages of database, which includes distance education programs throughout the world in 1965, and another 556 pages of database on distance education programs in universities in 1968. It was in 1973 when G. Moore drew the attention of English speaking academics for the need of theoretical formulation in distance education. He explains that there should be such formulation, as there are a growing number of people who cannot or will not attend conventional institutions, and choose to learn apart from their teachers and so, we need to develop various forms of non-traditional methods for them (Keegan, 1993).

Besides, Moore is not the only one who talked about the importance of developing theory in distance education, and many researchers tried to develop theories and talked about the importance of building new theories in distance education. Simonson and his colleagues (1999) argue that theories guide the research and practice of distance education. (Simonson, et. al., 1999) And Saba (2003) believes that theorists, in attempts to improve our understanding of distance education, would build models and each of them try to explain an important aspect of it (Saba, 2003).

In this regard, these changes in theoretical approaches to learning would be discussed in three categories: *concepts, instructional-design and approaches*.

1.3.2.1. Conceptual theories (concepts). Keegan (1990, p. 1) gives one of the most lucid and detailed description of the characteristics of distance education, and his list of these criteria includes:

- The quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education).
- The influence of an educational organization both in the planning and preparation of learning materials and in the provision of student-support services (this distinguishes it from private study and teach-yourself programs).
- The use of technical media—print, audio, video, or computer—to unite teacher and learner and carry the content of the course.
- The provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education).
- The quasi-permanent absence of the learning group throughout the length of the learning process, so that people are usually taught as individuals and not in groups, with the possibility of occasional meetings for both didactic and socialization purposes (Keegan, 1990, p.44, as cited in Holmberg, 2003, p. 80).

Keegan (1986) also categorized the attempts of defining and describing distance education in three groups: industrialization of teaching, independence and autonomy, and interaction and communication (Keegan, 1986, as cited in Simonson, Schlosser, and Hanson, 1999).Following is a summary of this description:

1-Industrialization of teaching: Peters (1967) (English version revised by the author in 1983) suggested that industrial society produced distance education and for providing evidence for his notion, he states that industrial production process and distance education both have mutual characteristics; such as mechanization, division of labor, centralization, standardization, and mass production. He also sees the success of distance education in these common features. He also observes that after two decades (here we need to consider the reference's date), however, there is a shift in modern era from those characteristics to other features; such as the emergence of new and more individualized technology, along with more decentralized decision-making, self-realization, self-expression, personal values (which focus on quality of life), and interdependence rather than independence (Peters, 1983, as cited in Amundsen, 1993).

Peters (1983) believes that the industrial structure characteristics of distance teaching should be taken into account, every time we want to make decision about the process of teaching-learning (Peters, 1983, as cited in Simonson, Schlosser, Hanson, 1999).

Holmberg (1983) also represented a description of distance education and the first report in English – which was the first part of his theoretical framework - published in 1983. Holmberg concentrates more on the *inter-personalization* of the teaching process, while he created a new term for describing the communication between learner and teacher in distance education, as they are separated by time and space, he called it *'non-contiguous communication'*. Moreover, he states that prerequisite for motivating the learner - and as a result, learning, itself, is the establishment of a personal relationship between learner and teacher. The point is that in distance education the communication means are *non-contiguous*, and the teachers need to use these means to accomplish this aim. Holmberg, also, states that systems in distance education should have free pacing in study units from start to finish, offer open admission and have no fixed due dates for assignments with no required activities and seminars. Holmberg's work has been used as one basis for a number of studies which investigate different aspects of personal contact in teaching-learning process in the distance education (Holmberg, 1983, as cited in Amundsen, 1993).

2 - Interaction and communication: *"A theory of reintegration of the teaching and learning acts"* developed by Keegan. Keegan (1986, 1990) believes that the general education theory is the basis for distance education, and the difference is that in distance education the frameworks are different and it cannot be in group-based and oral instruction. He argues that instead of characterizing the distance education by interpersonal communication, it should be characterized by the separation of the teaching acts from learning acts in time and space (Keegan, 1986, 1990, as cited in Amundsen, 1993).

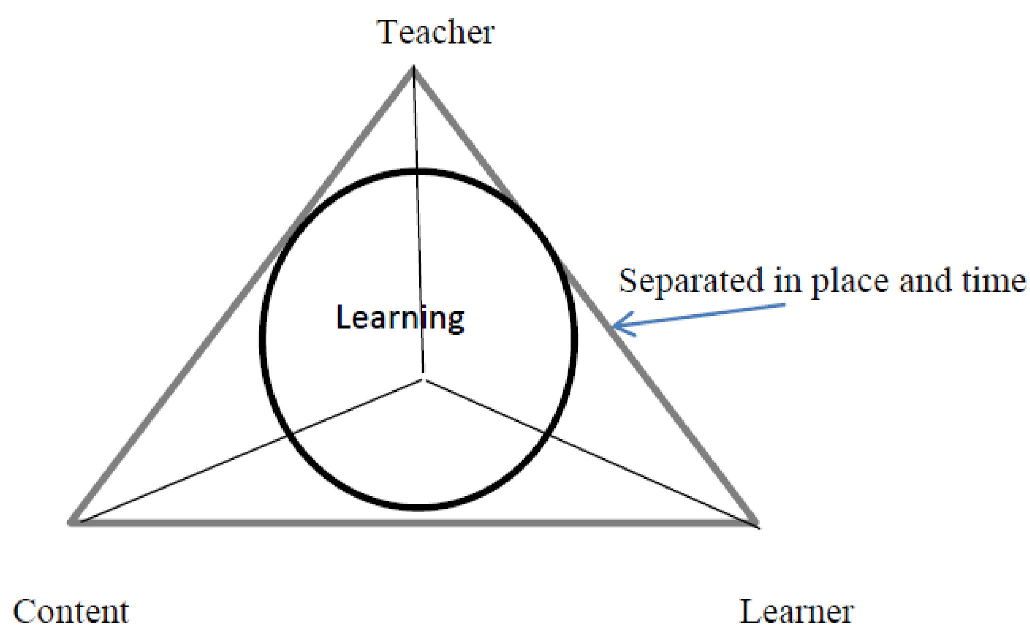

Figure 2: A framework for viewing instructional roles and decisions in distance education (Source: Amundsen, 1993, p. 74).

Regarding the separation between teacher and learner, *figure 2* show a basic model with a simple view for distance education. Nevertheless, by considering a new generation of distance education (with the Internet and World Wide Web), the separation between learner and teacher is only by place, and time is not necessary as an issue here anymore. Therefore, we can see that scholars nowadays are using two different terms regarding the *time* issue in conducting the communication in teaching and learning in distance. Conducting distance teaching-learning can be done by time-independent (or *asynchronous*) communication formats, such as e-mail, mail correspondence, or audio or video recording devices, or it can use time-dependence (or *synchronous*) communication formats such as the telephone (or the Internet and various communication applications), radio, television, etc. (Allen, et al., 2004).

Garrison's theory (1989), which is called: "*the theory of communication and learner control"*, is another theory that concentrates on interaction and communication. This theory starts with the educational transaction between learner and teacher, and the educational transaction is "based on seeking understanding and knowledge through debate and dialogue," which emphasizes the necessity of having two-way communication between learner and teacher (Garrison, 1989, p.12). The main argument by Garrison is that the distance education and technology are inseparable, while his theory was evolved during the increase usage of new sophisticated instructional technology (Amundsen, 1993).

Also, Garrison and Peters predicted that in distance education our practice must change; Peters sees these changes by moving away from the earlier industrial format, and Garrison suggests that emerging new technology will limit the need to maintain many of the current industrial characteristics - whose changes, now after two decades, we can see (Amundsen, 1993).

3 - Independence and autonomy: Moore, during ten years (1972, 1973, 1983, 1986), developed and refined his theory based on a learner's autonomy. Although, he developed a theory regarding distance education, he believes that distance education is *education*, and we can apply most of the conventional education theory and practice - that we know - in distance education as well. This theory has two main dimensions: *transactional distance* and *learner autonomy*. Moore (1991) describes his theory as: "the transaction that we call distance education occurs between individuals who are teachers and learners, in an environment that has the special characteristic of one from another, and a consequent set of special teaching and learning behaviors. It is the physical separation that leads to a psychological and communications gap, a space of potential misunderstanding between inputs from instructor and those of the learner, and this is the *transactional distance*" (Moore, 1991, as cited in Amundsen, 1993, pp. 62-63).

Continuing Moore's model, Saba (1990) added a new idea, of "*virtual contiguity*" to the model, as Saba (1990) insists on "the importance of integrated systems that bring teacher and learner together, optimize dialogue between them, and eliminate consequences of being separate in space" (Saba, 1990, as cited in Sauvé, 1993, p. 99).Also, Verduin and Clark (1991) examined the concept of "*transactional distance*" in Moore's model, and proposed "*a three dimensional theory of distance education"* with three new variables that would affect the learner: dialogue/support, structure/specialized competence, and general competence/self-directedness (Verduin & Clark, 1991, as cited in Sauvé, 1993, p. 99, and as cited in Amundsen, 1993). Table 2 shows a summary of these theories over the time.

4 - Emergence of new conceptual theories: In distance education, due to the fast development of new technology, the needs for new conceptual frameworks are essential. Therefore, the attempt to introduce more theories or complete the previous ones in distance

education continues, and still researchers are trying to find new ways to describe the field. Most of these attempts are basically based on the components of the previous theories and definitions.

In this regard, Amundsen (1993) believed that for having a new evolution of theory in distance education, the new theory must be based on a general framework of teaching and learning itself, while the central position must be occupied by learning and not by the learner or the notion of distance. He explained that distance education can be seen as a field of inquiry, while, being well rooted in theories of teaching and learning. He stated that further research should try to provide a systematic analysis of the meaning of distance to the process of teaching and learning. In other words, the *intended learning* is the starting point, and then we need to consider the implications for the learner, and the content and the teaching role within the distance setting (Amundsen, 1993).

Later, Simonson, Schlosser, and Hanson (1999) introduced the "*Equivalency Theory*", after new technology allowed instructors to have virtual classrooms - which was a revolution in distance education. They first define distance education as: "formal, institutionally-based educational activities where the learner and teacher are separated from one another and where two-way interactive telecommunication systems are used to synchronously and asynchronously connect them for sharing of video, voice, and data-based instruction" (Simonson, Schlosser, & Hanson, 1999, p. 8). Then, based on this definition, they argue that "education at distance should be built on the concept of an equivalency of learning experience" (Simonson, Schlosser, & Hanson, 1999, p. 7).

Likewise, many researchers (see, for example, Moore & Kearsley 2012, and Peters, 2001, and 2010) continue to modify their theories and descriptions, due to the development of new technology, along with the new opportunities and challenges that these changes bring to the field.

Table 2

A comparison of theoretical perspectives (Source: Amundsen, 1993, p.71)

Author(s)	*Central concepts*	*Primary focus*	*Background*
Peters	Industrial Post industrial	Match between societal principles and values	Cultural sociology
Moore	Transactional distance (dialogue, structure) Learner Autonomy	Perceived needs and desire of the adult learner	Independent study
Holmberg	Learner autonomy Non-contiguous communication Guided didactic conversation	Promotion of learning through personal and conversational methods	Humanist approach to education
Keegan	Reintegration of teaching and learning acts	Recreation of interpersonal components of face-to-face teaching	Framework of traditional pedagogy
Garrison (Shale, Baynton)	Educational transaction Learner control Communication	Facilitation of the educational transaction	Communication Theory Principle of adult education
Verduin and Clark	Dialogue/Support Structure/Specialized competence General competence/Self-directedness	Requirement of both the learning task and learner	Principles of adult education Structure of knowledge

1.3.2.2. Instructional- design theories. Keegan (1993) argued that we need a (theory-based) justification which can be found in *the reintegration of the teaching and learning acts*. He sees separation between teacher and learner as both an advantage and a challenge to the autonomous learner. He describes his notion and states that a distance system tries to recreate the moment that the learning-teaching interaction - over space and time – occurs. He also clarifies that the linkage of learning materials to learning is in the center of this process. As in traditional education (i.e., the school, university), the learner is in an environment which is created to support learning, so this learning link is a given. Therefore, in distance education for recreating this link between teaching and learning, we need a deliberately planned interpersonal communication. Keegan focuses directly on *the learning act,* and not on the learner or teaching. The author concludes that for having the lower drop-out rate, the higher quality of learning, and higher status for institute, we need to be able to manage integration more successfully in distance education. His hypotheses have been tested and some support has been found (Keegan, 1986, 1990, as cited in Amundsen, 1993).

On the other hand, Garrison (1993) states that distance education, historically, has been preoccupied with access issues, and even many sees that as the reason for distance education existence. He also admits that with new communications technology, this image of independent and solitary learner has been changing. He argues that it is difficult to assess the quality of distance education, due to agreeing on a common meaning or set of objective criteria. This meaning of quality can vary considerably because of different assumptions and values of distance educator, while views about how to interpret the quality in distance education are crucial from both theoretical and practical perspectives (Garrison, 1993).

Black (1992) also talks about a main concern among university faculties regarding the quality of distance education which mainly is the teacher-student transaction. She states that the faculty interviewed believed that for quality assurance in distance education, academic discourse and dialogue are necessary features for it (Black, 1992, as cited in Garrison, 1993). This notion has been supported also by Garrison and Shale’s (1990) work which argues that for improving the quality of the educational process, we need to increase two-way communication and this increase has the most significant impact upon effectiveness of learning. Although the quality of learning would be under the influence of designing the print materials and other resources, the primary impact is the provision and establishment of sustained discourse between learner and teacher (Garrison& Shale, 1990, as cited in Garrison, 1993).

Likewise, Moore (1983) talks about two variables for defining the relationship between the teacher and the learner, which he called *structure* and *dialogue*. He defines them as: “Structure is the control an instructor needs to impose on a teaching-learning session in order to enable the learner to achieve the desired goals. Dialogue is the autonomy that the learner needs in order to reach the desired goals. Some students are more autonomous, and need less structure, some require much more structure and are not comfortable with too much autonomy” (Moore, 1983,as cited in Saba, 2002, p.7).

Then, Moore (1983) argues that by these two factors we can define distance education. He explains that when structure is increased, dialogue is decreased, and when dialogue is increased, structure is decreased. Also, transactional distance can be defined by these two variables: when dialogue is increased, transactional distance is decreased, and when structure is increased, transactional distance is increased” (Moore, 1983, as cited in Saba, 2002, p.7).

Moore (1993) states that distance education programs can be classified based on the degree of learner autonomy permitted in each of them, by seeing to what extent the learner or teacher controls the main teaching-learning processes. He further hypostasizes that more dependent students prefer programs with more dialogues, and some want a great deal more of structure and some prefer an informal relationship with the instructor, while students with advanced competence – as autonomous learners - are more comfortable with less dialogue with little structure (Moore, 1993).

So, it can be seen that based on various conceptual frameworks, there would be different defined instructional frameworks. Further discussion, in this regard, will be offered in the next sections by referring to other instructional-design theories/frameworks in other discussions.

1.3.2.3. Approaches. It is a fact that the ideal, in distance education studies, is the conventional education, and the main attempt is to compare distance education with conventional/classroom education. Also, it is a common notion that distance education in its core is *education*, and we need to consider concepts and theories in education, in general, in distance education studies. Despite these facts, Ljosa (1993) states that it is difficult to apply general education theories in distance education, due to the fact that these theories are developed to describe conventional education, with teachers and students interacting directly in a classroom. He believes that it is similar to the situation of automobile inventors, when they were trying to imagine a car as a sort of carriage being pulled in front by something other than a horse. Therefore, we need to see distance education as it is, and try to find approaches suitable to its capacities and opportunities. Ljosa (1993) concludes that some aspects of distance education, such as teaching and communication processes, or group-based learning processes are quite different from conventional education, and we need to be aware of these differences when we apply education theories in distance education (Ljosa, 1993).

Also, by reviewing different conceptual and instructional theories, we can see that by emphasizing various aspects or elements of distance education, we can come up with different designs and approaches. Wedemeyer (1981) explains that four elements exist in the teaching-learning process: a teacher, a learner or learners, something to be taught/ learned, and a communication system or mode (Wedemeyer, 1981, as cited in Sauvé, 1993). For designing and conducting a program/course (both in distance or conventional institutes) these four elements should be in a harmony towards a common aim.

On the other hand, there are both limitations and opportunities in different types of education as well, thus, we need to understand them, and try to design and carry out a program/course based on this understanding. For example, direct communication between a teacher and students in a classroom is an opportunity, which can help the participants in a course to avoid many misunderstandings and miscommunications. At the same time, there is the limitation of time and place regarding participating in a class, which means everybody should attend the class at the certain time and in a certain place. In distance education, we may avoid the limitation of time and place but using a medium for communication could cause misunderstanding and other problems in communication. Furthermore, using new technology and the Internet does not mean that we can avoid all the limitations of a classroom, as it can bring other limitations along with these new opportunities. For instance, an Internet connection can be limited or expensive or many students cannot afford having an advanced laptop/PC for participating in an online program/course.

While considering these factors, for designing and delivering a program/course in distance education, we need to identify those four elements (teacher, learner, content, media), and then, find the opportunities and limitations in different scales and in various levels- based on our purposes and aims. For instance, designing a course with video conferencing, as its main communication medium, in a city or country with a very weak Internet connection, would not be a sensible decision.

1.3.3. Shifts in DE history - Driven by changes in conceptual ideas of learning. Garrison (1993) says that, “not all kinds of learning are educational” and the main assumption, according to education theories, is that only a special kind of learning would be represented by education. There is a difference between learning that occurs in a formal and academic teaching-learning process and that which occurs in the natural societal context. A complex interaction between teacher and students, whose its purpose is identifying, understanding and confirming meaningful knowledge, is *education*. In distance education, however, some of the characteristics of formal education, such as independence and interaction, have new meanings and need to be defined in this new context. Garrison (1993) argues that the dominant paradigm in distance education literature sees independence as the ultimate goal. In other words, the ideal is to be able to design a package for students which can maximize independence along with reducing the need for interaction. Independence can be defined as freedom to study where and when the learner wishes. And interaction, in this context, means how the students respond to course materials and sources provided for their study (Garrison, 1993, p.13).

Garrison's argument (1993) is based on the *Cognitive Learning Theory* and as he explains, a cognitive/constructivist approach would maximize explanatory feedback, and this feedback encourages the construction and integration of a new knowledge structure which is the students' responsibility from which to construct meaning. He also says that this theory reflects *understanding* as a valued objective, and not as a measurable and observable behavior. So, based on the *cognitive learning theory*, monitoring and adopting unpredicted changes in student thinking and behavior, as instruction proceeds, is the main challenge and this only can be achieved through two-way communication. This two-way communication is now within the reach of most distance educators and most of the distance education institutes in the industrialized world. Therefore, it can be said that because of an advance in technology, which facilitated interaction via the Internet, this concept in recent literature has been changed. So, as a result, now, it is possible to address both access and quality concerns which was discussed in distance education theories and literature before (Garrison, 1993).

An important point in this discussion is the existence of an inherent risk to lose an educational perspective in distance education, when distance educators focus too strongly on technologies and become obsessed or enamored with new technologies. On the other hand, we need to keep in mind that distance education relies on communication meditated via technology, and consequently, it is necessary to keep a balance between technological capabilities and educational needs. Also, quality should not be sacrificed simply for access and cost-efficiencies. Thus, we need technology and media to facilitate the educational transaction, which values critical and collaborative interaction, while, having access to an affordable method as well (Garrison, 1993).

Bernard and his colleagues (2004) in their meta-analysis study come to the same conclusion. They state that in distance education, the claims of, "the importance of pedagogy over media" (which was presented by Clark in 1983 and 1994) is basically correct (Bernard et.al, 2004, p.1).

They also talk about distinguishing between "distance teaching" and "distance learning", which can be the same case in face-to-face education too. *Distance teaching* is an activity done by a teacher, such as lecturing, questioning, providing feedback etc., and *distance learning* is an activity done by students, such as taking notes, studying, reviewing, revising, etc. Therefore, we need two types of media, one supports teaching and the other supports learning. Cobb (1997) clears the matter further, by saying that the medium is not simply a neutral and independent means to deliver the course content, but it becomes a tool of the learner's cognitive engagement. (Cobb, 1997, as cited in Bernard et.al, 2004).

Otto Peters (2010) is one of the scholars who has his own theory regarding distance education, and he, also, believes and emphasizes that in distance education "the pedagogical goals" must be stressed. He states that if we have the most powerful digital learning environment which is equipped with the most up-to-date appliances and use it only for transporting data or information, it only would be "an empty apparatus". This data or information, like any other type of education, has to transfer to "knowledge", and for doing this we need educational science (Otto Peters, 2010).

Allen and his colleagues (2004) also tried to evaluate the effectiveness of distance learning by using the meta-analysis method. In this study, they, similarly, emphasized that by using new technologies in education, the goals of education would not be changed, and to accomplish those goals, these new technologies only would change the process of communication within these educational settings. They say that in distance education, we see a change in *"the fundamental orientation of the learning environment"* (p. 403). In distance education we are facing a wide range of choices in our pedagogical approach and instructional tools. So, distance education can be defined as a teaching and learning environment, in which the student and instructor would not be *physically* present in the same location. However, communication between the learner and teacher via a web server would require different kinds of skills and techniques in communication by both the teacher and student (Allen, et al., 2004).

Regarding these skills and methods, Peters (2010), in his book "*Distance Education in Transition*", talks about the skills that students need to have in distance education. He quotes from Franz-Theo Gottwald and K. Peter Sprinkart (1998), which state that students in distance education need five skills: selection and decision-making, self-determination and orientation, construction-qualifactory acquisition, instrumental- qualifactory acquisition, and learning and organizing skills (Gottwald & Sprinkart, 1998, as cited in Peters, 2010).

It means that students must recognize the actual learning goals. They need to willingly organize and plan their learning independently from the teacher. They need to be capable of finding, organizing and evaluating the vast information, which is accessible in databases. However, there is an argument among scholars that these skills are required in all sorts of education, but learning at a distance creates a very different environment for students, and so these skills should be seen in completely different light (Peters, 2010).

On the other hand, some scholars believe that teachers also need to develop specific skills to be successful in distance education; for example, Schoenfeld-Tacher and Persichitte (2000) and Spector (2001) indicate that in distance education teachers require different sets of pedagogical and technical competencies (Schoenfeld-Tacher & Persichitte, 2000, and Spector , 2001, as cited in Bernard et. al., 2004).

1.3.3.1. Distance education organizations and different models of distance education. Bates (2005) uses different terms regarding various models of distance education. When a course includes both on-campus and distance courses delivered online, it is *distributed learning*. And for a combination of online and face-to-face teaching the terms mixed mode, hybrid, and blended are used. Bates (2005) argues that hybrid and blended modes can be used when we add online teaching to regular class time or to a print-based correspondence course, while a mixed mode can be used in the *specific context of a reduction in class time to accommodate more tim*e studying online. He also clarifies that no consistency exists yet in terminology (Bates, 2005).

These days, many institutions choose to add e-mail, online discussion forums, and Web articles to their existing print-based courses. So, these institutions claim that they are offering online courses, while in fact they have merely added one or a few online components to what has been basically a print-based, broadcast-based, or simply a face-to-face course. On the other hand, even when a course is designed from scratch as an 'online' course, it would often contain some printed readings, and some of these mainly online courses even require attendance at weekend classes, or a summer institute (Bates, 2005).

Bates (2005) defines the term '*fully online*' for the courses when the students can take the course *without* having to attend any face-to-face classes, and they *must* have access to a computer and the Internet to participate in the course and study. With this definition, a fully online course is a distance course. Furthermore, he explains that the term '*e-learning*' would be used where a course may have anything from a relatively small Web-based component of a program or course to a fully online offering. *Figure 3* shows these developments graphically (Bates, 2005).

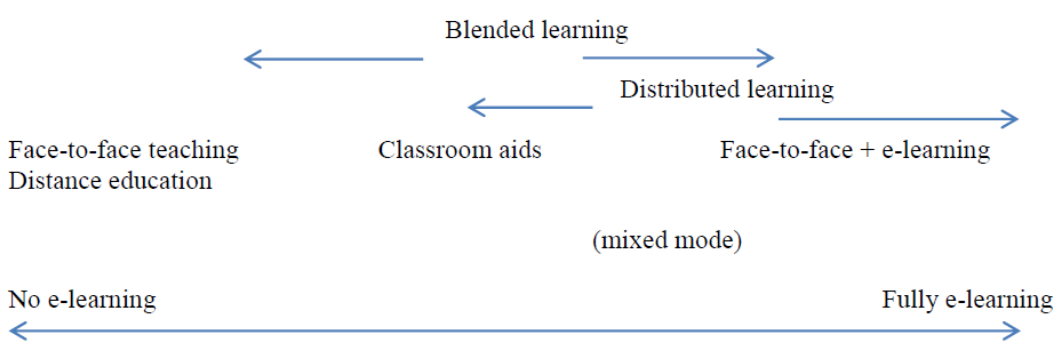

Figure 3: The continuum of technology-based learning (Source: Bates & Poole, 2003, p.127).

Moreover, Moore and Kearsley (2012) explain the levels of distance education organizations. They state that there are a few different models in distance education: single-model institutions, dual-model institutions, individual teachers, virtual universities and consortia, and courses and programs (Moore & Kearsley, 2012).

They also say that single-mode institutions are the institutions in which the sole activity in them is distance education. The Open Universities are good examples of this model. Another good example is Athabasca University (AU) in Canada with over 1,200 faculty and staff members who are delivering over 700 courses to over 37,000 students. When an institution adds distance education to its previously established campus and class-based teaching, it is considered to be a dual-mode institution. For example, the Pennsylvania State University is a dual-mode model institution. And when teachers and instructors adopt a distance education feature for delivering their courses, while they do all the tasks by themselves without any help from designers or other skilled forces, we have individual teachers who are teaching at a distance (Moore & Kearsley, 2012).

1.3.4. Shifts in DE history - Driven by practical/societal problems/needs. As it was mentioned before, the first vision for establishing distance education was to provide access to education for people who could not participate in educational institutions for different reasons. In the 19th century, this was for the benefit of women or the working class, and nowadays it is true for other groups as well. These groups can be people who are living far from educational institutes, people with health problems who cannot attend regular classes, people who are working and do not have time to participate in regular programs, or people who need constant updates of knowledge for their career (Moore & Kearsley, 2012).

Moreover, we are living in a new millennium that has been described as an Information Age, a Knowledge Society, or a Digital Age, and it seems that many changes globally come from changes in technology. At this time in our history, we can see that technological developments would converge and reinforce other changes in economic, demographic and pedagogic trends (and likewise). Changes in technology caused a huge change in information supply (between 1 and 2 extrabytes -which is10^{18} - of new information was produced each year during the last few years), and even brought more access to this information by introducing the World Wide Web to more and more people (however this access still is not equal between all the people in the world). Obviously, these changes caused dynamic changes in other aspects of people's lives as well (Moore & Kearsley, 2012).

On the other hand, technology is not the only engine behind new changes in the societies. Regarding distance education, economics is another force for change. While the cost of electronically transmitting information - which is an important aspect in today's distance education - has been falling, the cost of conventional education and training has been rising. Besides, in the information age with an aging labor force that needs to continue learning for effective employability, new forces lead societies to an increase in demand for new ways and methods of continuously acquiring information and skills (Moore & Kearsley, 2012).

Today, the key driver of economic development, social development, personal development, and - even at some points - political development, is the knowledge which has been converted from access to information and the skills. Moreover, with the information explosion, one of the immediate results would be that the information part of our knowledge becomes out of date very quickly and fast. For example, 18 months after graduating from an engineering program, half of what has been learned by students will be out of date. So, it should be replaced with new information, or at least being "topped up" frequently, and this is more vital in fields with higher competition environment (Moore & Kearsley, 2012).

Although, we talked about distance education's advantages, many challenges exist for providing distance education. Na Ubon and Kimble (2002) state that by evolving more online education among higher education, this means less physical interaction and social opportunities for engaging in face-to-face meeting for people who are involved in this type of learning - teaching system. Therefore, lack of physical interaction, between the teacher and student and among students, would causes some problems; such as space and time constrains, the lack of face-to-face interaction and social cues, language and cultural barriers, problems of trust, and low levels of collaboration (Na Ubon & Kimble, 2002).

Latchem and Jung (2012) talk about distance education challenges from another point of view. They argue that the motivations and circumstances for students who choose to study in distance vary in many ways. For instance, students in western countries choose distance education for its convenience and flexibility, while this type of education for students in other parts of the world is the only way to access education. Studying at a distance put a heavier reliance on the students' motivation and their capacity to take responsibility for their learning. The main factor for higher drop-out rates in distance education institutes could be because of a lack of handy academic, administrative, technical and social support. This means that we need to provide a sense of belonging among students across time and space. Speaking a different language, coming from other cultures, and not having access to a reliable Internet connection are considered as other challenges. Also, in institutes who use hourly, short-contract, or part-time tutors for tutoring the students - who do not have enough experience and understanding - the lack of sufficient and capable human resources is another problem (Latchem & Jung, 2012, as cited in Jung & Latchem 2012).

As the aim of this study is to examine quality management in distance higher education, after this short introduction regarding distance education, in the next section, higher education and the concept of quality in higher education institutes will be discussed.

1.4. Higher Education System Design Components (Some Definitions)

1.4.1. System and education system. As the first step, for managing quality, we need to have a clear view and good understanding of the structure and components of education institutes in general. Among scholars, it is an accepted view that in all education institutes we have a complex mechanism of different systems within systems. All these systems work together, complete each other's work, and keep an educational institute working properly. Therefore, the first question here would be: "what is a system?"

Moore and Kearsley (2012) explain that a good example of a system is a human body. In this system, to make the whole body work effectively, every part of the body has a role to play. It is also true, that the body can still function – however to a reduced state - when some parts are cut off. Besides, there are some parts that we cannot cut off, as when they cease to work, the other parts, no matter how healthy they are, cannot work and the whole body's function would stop. And by damaging or taking away even the least important parts, the whole organism would deteriorate. On the other hand, by building up one part, while ignoring any attention to the other parts, more likely it would cause damages to the whole body. We can say a body is healthy, when all the parts are healthy, and all the parts do their tasks and play their roles in harmony with each other. So, for understanding a system, it is essential to understand each of these parts in the system and by diagnosing which part is not working properly, we can correct a malfunction in the system. It can be said that it is a good example for understanding the concept of a system (Moore & Kearsley, 2012).

Obviously, the human body is a very complex system, but it is also only a part of a much bigger system. It means, for example, by looking at a symphony orchestra or a football team, we would see how these different human systems, as a collective system, are functioning and integrated together. In these systems, the individual body would be considered as one subsystem within the larger system (Moore & Kearsley, 2012).

Dick, Carey and Carey (2009) give a simple definition for a system as: "A system is technically a set of interrelated parts, all which work together toward a defined goal. The parts of the system depend on each other for input and output, and the entire system uses feedback to determine if its desired goal has been reached. If it has not, then the system is modified until it does reach the goal" (Dick, Carey & Carey, 2009, p.1). Furthermore, they state that the system components in an education system are *the instructor, the learners, the instructional materials,* and *the learning environment*, while all interact for achieving the desirable goal. In this system success depends on a determination of the exact contribution of each component to the desired outcome, and not on any particular component in the system. So, there must be a clear assessment of the effectiveness of the system by making learning happen, along with existence of a mechanism to make essential changes if learning fails to occur. Noticeably, as an instructional system includes human components, it is very complex and dynamic, which requires constant monitoring and adjustment (Dick, Carey & Carey, 2009).

Concerning system mechanism, Dick and his colleagues (2009) give the example of managing Type 1 diabetes. They explain that for maintaining a healthy blood sugar level, we need a set of complex system components to work together. These components can be *diet, physical exertion, emotional exertion, insulin,* and finally *each individual's unique metabolic processing of these components*. Obviously, the goal is a stable blood sugar, and we have the periodic blood sugar readings as the feedback mechanism. So, when the system goes out of balance, evidently, one or more system components must be adjusted to bring a reading up or down, as needed. Therefore, this is the system approach which enables professionals to identify interacting components of diabetes care, establish normal human ranges for each component, while adjusting a care regimen as needed to accommodate individual differences. An accepted perspective here is that this system is dynamic rather than static, and it requires continuous monitoring as the person grows, ages, and changes his/her lifestyle (Dick, Carey & Carey, 2009).

Therefore, in an educational system (either conventional or distance), for getting the best results, all the different human and technical resources (in various forms and shapes) should be delivered in a system form. Also, for understanding an educational program, the best way is to use a system approach. So, all the components and processes - which operate when teaching and learning in an education system occurs - shape the educational system. As an example for illustrating an educational system, Jaap Scheerens (2004) developed a basic conceptual framework that illustrates education as a productive system, which is shown in *figure 4* (Scheerens, 2004).

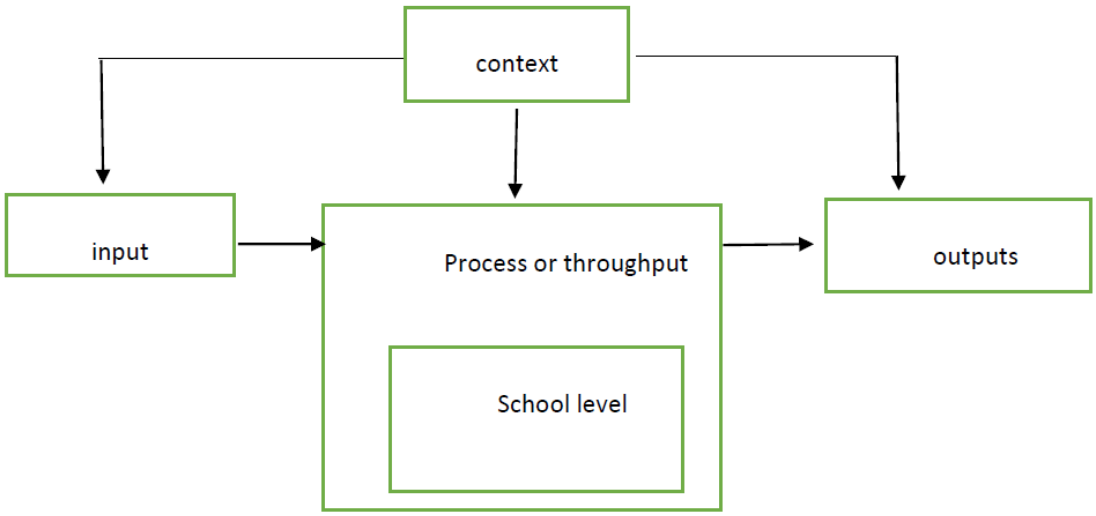

Figure 4: A basic systems model on the functioning of education (Source: Scheerens, 2004, p.116).

As it can be seen, this model demonstrates 4 main components: *input*, *process*, *output*, and *context*. With regard to the process component, we have two levels in this figure: school and class, but he explains that in the process feature we need to consider the hierarchical nature of processes and conditions. Scheerens also talks about context dimension with two functions: one as a source of inputs and constraints, and the other one as a generator of the required outputs. He, likewise, in the output process differentiates between outcomes in direct outputs, then, longer term outcomes, and finally the ultimate social impact (Scheerens, 2004).

Later, Scheerens, Luyten and van Ravens (2011), explain that his framework can be seen in different levels for different education systems; for instance, we can choose the education system at the national level, classroom level, and even the local community or student level. Also, they argue that it is the "*context*" dimension in the model which "gives room for situational adoption to a local condition". Therefore, they are confident that this framework is flexible and quite general for describing any functional educational system (Scheerens, Luyten & van Ravens, 2011, p. 36).

With this point of view, this framework can be used in any part of an educational institute for executing any *task*. For example, at the class level we have a teaching-learning process, which has its own *inputs, context, process,* and *outputs*, while at another level, such as an institute's or department's level, we would have different *inputs, context, process*, and *outputs*. It can be said that, in general, the education process (at any level) is about transforming *inputs* into *outputs* for having "higher values", and some of the *outputs* (again at any level) are used directly as "consumption benefits", while others can serve as *intermediate inputs* into other processes within the system (Borden & Bottrill, 1994).

From another perspective also, an educational system can be seen as a working organization. A good example of this perspective would be a model for a learning organization (mainly for higher education institutes) designed by Ebner (2010). (See *figure* 5). In this model, we have three products: *study* /*course programs, learning environments*, and *research environments /opportunities*. Then, by using these products in an educational system, the results would be *outputs* and *outcomes*. *Output*s can be the instant results, such as, grades, graduations /finishing school, published papers, practical results of research, student's satisfaction, etc., while outcomes are vaster and for longer terms, such as, employment and fulfilling labor markets' needs and aims, having a better life and being satisfied with the situation in society, being a useful member in society, etc. Moreover, for the management process, we have *strategy development* and *the integrity and unity of research and teaching*. Also, we have some supporting systems, such as *human resource management*, *financial management*, *resource* *management*, *quality management*, *public relations*, and *information system management* (Ebner, 2010).

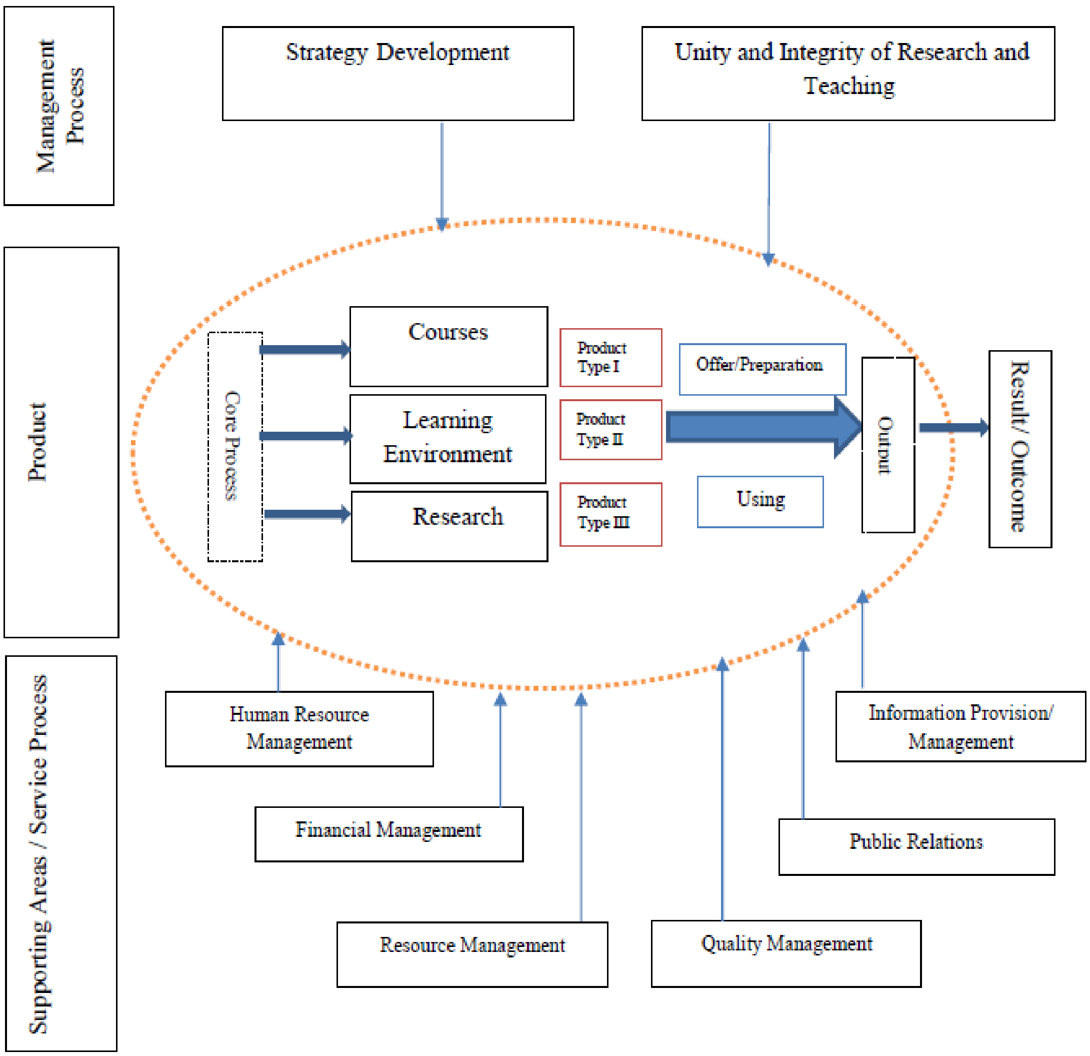

Figure 5: A design for a learning organization (Source: Ebner, 2010, p.271).

As it can be seen, this model illustrates the various components of an educational institute, and as it was said before, there would be different systems at different levels for executing various tasks within any institution, and the outputs of one running system/subsystem can be inputs for another working system/subsystem. For example, the resource management may manage the library in an educational institute, and one of the tasks which needs to be done by this component is providing resources needed in the teaching-learning process. Therefore, we have the task of providing teaching and learning materials for instructors and students as a part of the teaching-learning process (such as books, articles, databases, etc.), and in this example, the output for library system (which is required resources) is an input for teaching-learning process. Hence, this type of relationship can be seen in many different parts of an educational institute. In an educational organization, there are many different tasks for reaching its goals and aims, and for doing these tasks, we need to design various systems and each system has its own *input, context, process,* and *output*.

There are different frameworks and models for distance education systems as well. Moore and Kearsley's conceptual model (2012) is a good example. Based on Moore and Kearsley's model (2012), a distance education system includes: *teaching*, *learning*, *design*, *communication*, and *management*. They indicate that each of these processes is a complex process in a bigger and more complex system. They state that we need to consider how each of these processes are impacted by, and have impact on, certain forces in their operation environment, such as political, physical, economic, and social environments. However, by studying each of these subsystems separately, we need to understand how they impact each other, as well. *Figure 6* illustrates a conceptual model of distance education designed by Moore and Kearsley (2012) (Moore &Kearsley, 2012).

Moore and Kearsley (2012) explain that, in this chart, they are trying to demonstrate different subsystems in an educational system (in general) and in a distance education system (in particular), and this chart is a simple illustration of what they had in mind, which is very complicated and complex (Moore & Kearsley, 2012).

An important point here is that Moore and Kearsley (2012) focused on distance education systems, and they explained their models by stating that a distance education system consists of many subsystems with various components and processes. Then, as we focus on any single part of the system, we need to keep in mind the wider contexts as well and remember how these parts affect each other (Moore & Kearsley, 2012).

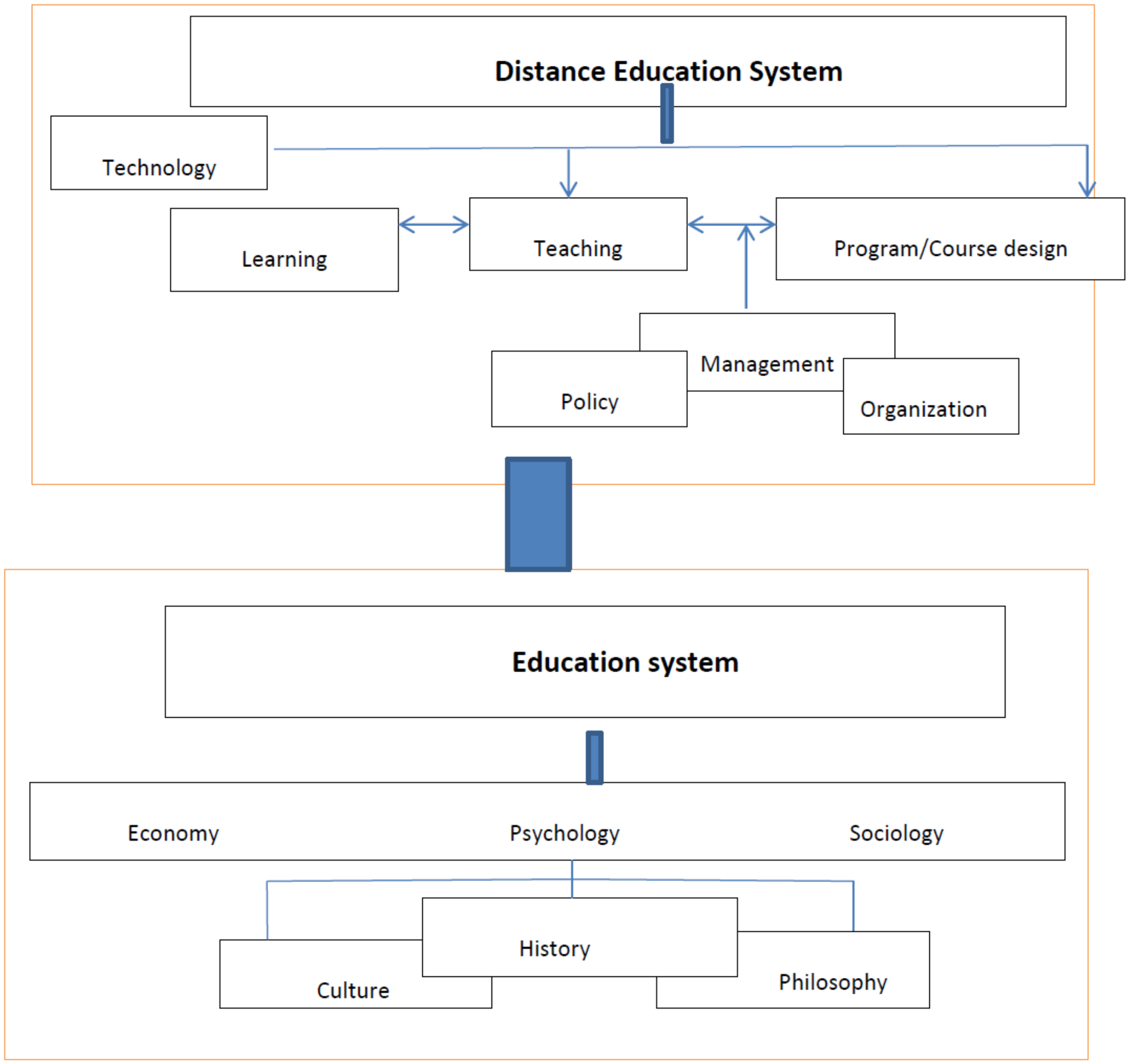

Figure 6: A conceptual model of distance education (Source: Moore & Kearsley, 2012, p.10).

In summary, they explain that these systems are systems within systems, which all act and interact with each other within a wider and bigger system. In an “education system” box we have educational history, educational psychology, educational sociology, economics of education, and so on. Then in the lower box we have a box named history, which includes the history of the nation, state or institution; and the culture (in the culture box) would emerge from that history. Then, the philosophy box is set - which is about the general philosophical assumptions of the society in which the distance education system is active. For instance, if the philosophy for distance education in one institution is that this type of education system is perceived primarily as a means of overcoming inequalities of educational opportunity, as a result, there would be consequences in deciding who is enrolled (the learner), how courses are designed, and what is taught. Obviously, another institution, which perceives the distance education primarily as a mean of improving worker productivity, would make different decisions regarding the same issues (Moore & Kearsley, 2012).

Also, in another subsystem for designing a course in a distance education institution, for example, we have a faculty for doing this task. So, they first consider what the student in that time can be expected to learn but before that, again, we need some basic hints, such as; the psychology of learning, the social role of education, and the philosophical positions on the nature of knowledge. They also show the decisions, which have been made by policy makers and managers, regarding the structure of the course, course content, and its selection against other possibilities. Furthermore, in all of them, these are a reflection of the culture, mission of the organization, its funding, its structure, as well as, the experience and views of its faculty (Moore & Kearsley, 2012).

Moreover, the institutional policy (which itself is influenced by national or state policies) determines some of these decisions, as well. People who are discussing the issue will consider its implementation by the people, who would teach the course, as well as their understanding of the students, who would participate in the course. And overall, all these processes are under the influence of the whole and overall educational system-like the standards set by the accrediting agency (Moore & Kearsley, 2012).

Then, Moore and Kearsley (2012) talked about component processes and elements of "*a working distance education system*" (See *figure 7*). They state that in every distance education system there must be:

- ✓ A subsystem for management to assess the needs, organize policy, and allocate resources, as well as to coordinate other subsystems and to evaluate outcomes.
- ✓ A source of content teaching and knowledge (i.e., an educational institution with faculty and other resources for providing content).
- ✓ A subsystem for designing the courses to structure this into activities and materials for students.
- ✓ Then a subsystem is needed to deliver the courses through technology and media to learners.
- ✓ Learners in their various environments.
- ✓ Support personnel and instructors who would interact with students and learners, while they are studying and using these materials (Moore & Kearsley, 2012).

We need to bear in mind that in distance education, technology plays an important role in providing quality in education. Evidently technology is expensive, and because of that, managers need to make decisions about the content of a course too. Moreover, sometimes we need to have external consultants as a source for knowledge and content in a course or program. Also, according to contemporary constructive philosophy, students are considered a source of knowledge, which leads to the inclusion of some self-directed learning activities – such as, a project work - in the design of courses (Moore & Kearsley, 2012).

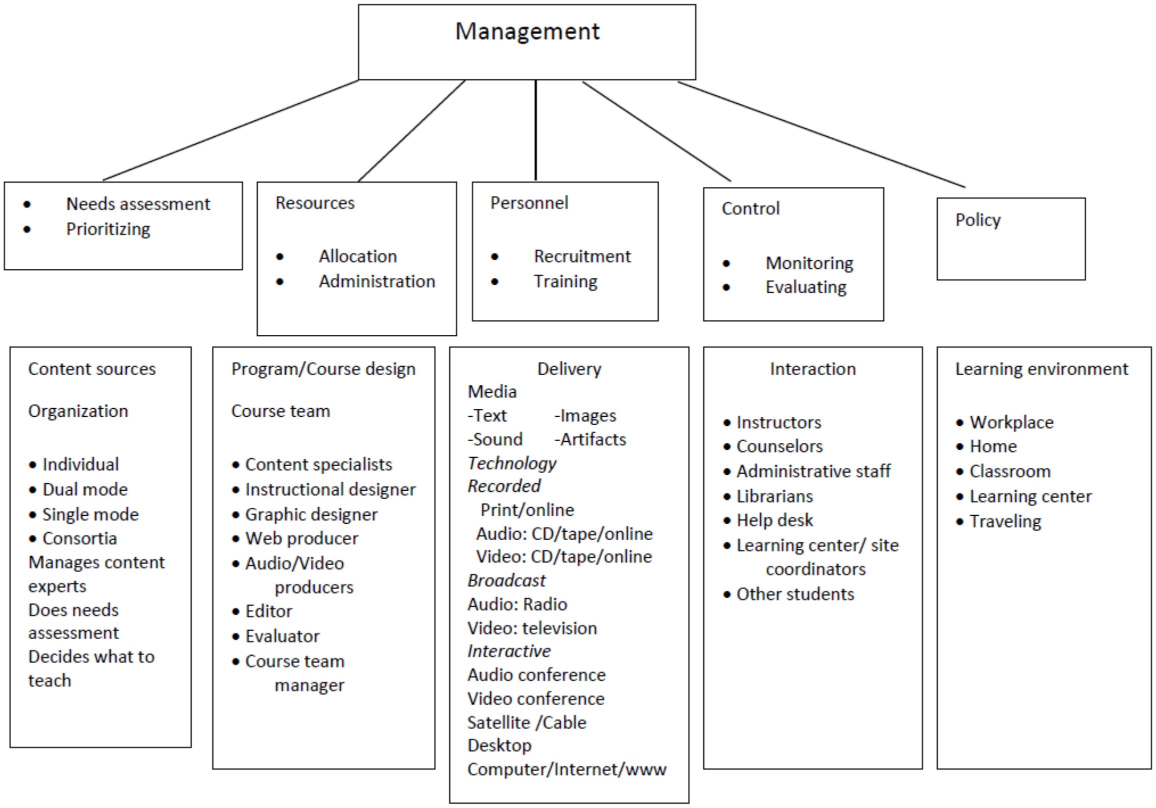

Figure 7: A system model for distance education (Source: Moore & Kearsley, 2012, p.14).

Moore and Kearsley (2012) explained this chart, further, by going into details about these components. They pointed out that subject, content, or materials would not make a course, and a structure is needed for building a course. However, designing a course is a common issue in both conventional and online education, but they are different in many ways. In an online course, design is based on technology and the way technology would be used in that course, while, the design for a course, which is to be taught in a classroom, would be different. A course design in distance education institute includes: the learning objectives, the exercises and activities, the layout of the text and graphics, the content of recorded videos and audios, and the questions for audio or video conference, in Wikis and blogs, or for interactive sessions by online chat sessions. Also, it includes the decisions about the web design, such as, which part should be delivered with which medium, how to do the evaluation, etc. (Moore & Kearsley, 2012).

Then, it comes to delivering the course materials while interacting via technology. Nowadays, the accepted delivering model is through the computer with an Internet connection. In some cases, while access to these new technologies is hard or impossible, still the old delivery methods, such as, printed books, compact disks, study guides, and even television broadcasting, as well as telephone and satellite-based video or audio conferencing are used (Moore & Kearsley, 2012).

Moore and Kearsley (2012), furthermore, introduced a list of indicators which are specifically for a distance education system-based on their introduced frameworks (See *figure 8*). Of course, it is a simple illustration and as the authors state, there are many different subsystems in this system, as well (Moore & Kearsley, 2012). These indicators can be seen as the primary quality indicators in distance education while, they only cover some inputs and outputs. We will examine more quality management indicators in the next sections in more details.

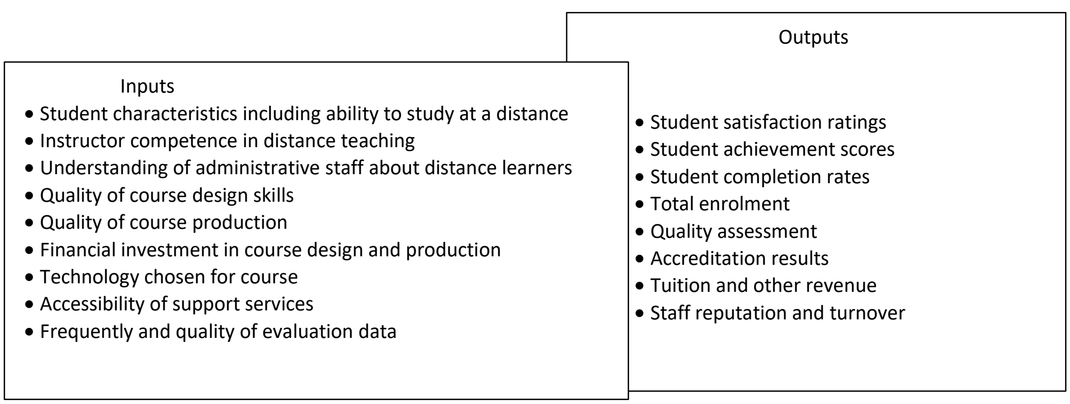

Figure 8: Inputs and Outputs of Distance Education (Source: Moore & Kearsley, 2012, p.19).

1.5. Higher Education and Quality Management

It can be said that, many changes have occurred in modern universities after getting rid of religious dogma and political ideologies, and in the center of this development was academic freedom in teaching and learning (which the founding fathers of these new universities enshrined in it), and Srikanthan and Dalrymple believe that this freedom should be embedded at the core of any model in modern universities (Srikanthan & Dalrymple, 2007).

Nevertheless, it was the pre-1990s period which represented the quality control era in higher education. That period represents the initiation of major moves towards managerial changes in universities and other higher education in states. Managing quality in this period was in *a control sense* and about ensuring the basic standards. This managerial practice was about carrying out inspections, and the result was losing steadily the motivation to improve quality among universities. Despite these inspections, which were mostly done by the government, the freedom was considered sacrosanct and autonomous, plus it was adopted as the attitude of the higher education institutions. The post-1990s period was the quality management ethos era for the higher education institution. From the early 1990s, institutions adopt formal systems of quality management instead of indirect controls or the traditional loose regulation (Srikanthan & Dalrymple, 2007).

Meanwhile, it has been argued by academics that finding a definition for quality, which is agreed on throughout the academic world, is impossible and defining the quality for higher education is no exception, and the author of the book, *"Developing Quality System in Education,"* calls it "the quality jungle". Although, there is no agreement on the definition for quality in higher education, we need to try to understand it, and to find some methods and tools to implement and control the quality in higher education (Doherty, 1994).

Some of these various opinions and notions, regarding quality, rooted in different point of views and objectives, and here, as an introduction to the quality in education discussion, some will be discussed.

Some authors like Pollitt (1992), define quality in the service sector, in general, simply as meeting the customers' wants and needs, but the question here is how to define these needs and wants in higher education, and most importantly who our customers are (Pollitt, 1992, as cited in Doherty 1994).

Ellis (1993) states that: "Quality itself is a somewhat more ambiguous term since it has connotations of both standards and excellence," (Ellis, 1993, as cited in Doherty, 1994, p. 7). Also, Cryer (1993), cited from Malcom Frazer, said that quality in higher education is very different from satisfying the customers with the latest model of a product and it is not synonymous with effectiveness, efficiency, and accountability but it embraces these terms (Cryer, 1993, as cited in Doherty, 1994, p7).

Barnett (1992) offers an interesting explanation about quality in education, which talks about higher education in general; he says:

It has been demonstrated that, through the process, the students' educational development has been enhanced: not only have they achieved the particular objectives set for the course but in doing so, they have also fulfilled the general educational aims of autonomy, of the ability to participate in reasoned discourse, of critical self-evaluation, and of coming to proper awareness of the ultimate contingency of all thought and action (Barnett, 1992, as cited in Harrison, 1994, p. 9).

On the other hand, Barnett (1992) argues that "Quality can be seen as a metaphor for rival views over the aims of higher education" (Barnett, 1992, as cited by Barnett, 1994, p.

69).Basically, it means that different participants/stakeholders have different views and expectations from an educational system, and consequently, their viewpoints for quality in an educational system vary as well. For example, employers seek different goals for an educational organization than inspectors of the same organization, and it means the definition for quality varies too. Therefore, based on different points of view, the concept for quality can be defined or sought.

In this regard, Barnett (1992) counts several "contemporary perceptions," or parties with a different perspective regarding quality in education, as following:

- "Technicist (the imposition of technical instruments)
- Collegial (the collective voice of the academic community)
- Epistemic (the territorial claims of a particular disciplinary community)
- Consumerist (the claims of the participants of would be participants)
- Employers (the voice of the labor market accepting the products of the system)
- Professional (the voices of the separate professional bodies)
- Inspectorial (the voices of the state and other external agencies with an authorized right to inspect higher education and pronounce on what they find)" (Barnett, 1992, as cited in Barnett, 1994, p.69).

Additionally, Doherty (1994) in his book, *"Developing quality system in education,"* introduced the technical description of quality management dimensions, concerning gathering and processing information / data as another way to look at quality in educational organizations. These dimensions (as he calls them) are more about gathering and processing data and information regarding quality in educational organizations:

- ➢ Quality assurance: examines the content, aims, levels, resourcing and projected outcomes of modules, courses, and programs.
- ➢ Quality control: requires feedback from staff, students, and employers and requires regular review and monitoring modules, courses, and programs.
- ➢ Quality audit: having an internal and/or external auditing system. It is obvious that a properly documented system (in which means that system has written proof that it does what it claims to do) can be audited.
- ➢ Quality assessment: judging of performance against criteria. This process is the subject of many conflicts and arguments, because finding an agreement about the criteria is very difficult to find.
- ➢ Quality enhancement: having a system for improving the quality in performing any process and doing it consciously and consistently. It means we need a sophisticated system for training and staff development along with a system for addressing and solving systemic problems - and it applies for any process in the institute, educational or otherwise (Doherty, 1994).

And as a whole, quality management is the complete process which would be set up to ensure that the quality processes in practice happen. This means having market analysis, monitoring and review of student learning experience, strategic and course planning, resourcing, curriculum development, and validation (Doherty, 1994).

Later, Harvey and Knight (1996) discussed that quality, in general, can be broken into five different but related conceptual dimensions:

- ✓ Quality as exceptional (for example, high standards)
- ✓ Quality as consistency (for example, zero effects)

- ✓ Quality as fitness to purpose (fitting customer specifications)
- ✓ Quality as value for money (as efficiency and effectiveness)
- ✓ Quality as transformative (an ongoing process that includes empowerment to take action and enhancement of customer satisfaction) (Harvey & Knight, 1996).

Moreover, Barnett (1992) believes that there is a logical and three-fold connection between three elements in higher education: the different conception of higher education, different approaches to quality, and the identification of performance indicators (PIs). So, first, various concepts of higher education should be discussed, then, based on these concepts, different approaches for quality can be found, and based on these approaches, the suitable performance indicators (PIs) can be defined and measured (Barnett, 1992, as cited in Barnett, 1994) [1].

In this regard also Clark (1983) believes that there are three major forces in higher education that shape three methodological approaches to quality: one is the state which favors numerical performance indicators (PIs), the other one is the academic community which favors peer review, and the last one is the market-led system which responds to consumer preferences (Clark, 1983, as cited in Barnett, 1994).

Moreover, Johnson and Golomski (1999) talk about four main issues regarding quality concepts in universities. They state that we need the incorporation of quality concepts in the

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[1] As a philosophical categorization for aims in higher education, Barnett (1992) talks about four different concepts and aims in higher education; which are:

- ❖ Producing highly qualified manpower (Here quality defines and measures as the ability of the students to succeed in their work and the PI would be the percentage of the students who would be employees and earn careers after graduation)
- ❖ Providing training for a research career (Quality in this concept is the research profiles of the staff more than the students' achievements and PIs are related output and input measures of researchers' activities)
- ❖ Providing efficient management for teaching provision. (Quality would be defined as efficiency and PIS are related to non-completion rates and measuring students who obtain good degrees or good marks)
- ❖ Offering a matter of extending life chances. (Quality means high demand for admitting in higher education institutes and PIs is about the range of institute's entrants and the growth in student numbers) (Harrison, cited in Doherty 1994)

curriculum, along with using this concept for improving *educational administration*, improving the *teaching* of any subject, and doing *research* (Johnson & Golomski, 1999).

As it can be seen, there are various opinions regarding how to address quality in higher education, and noticeably, the approaches would vary based on how the concept of quality would be defined.

On the other hand, from an organizational point of view, Johnson and Golomski (1999) describe six design principles for organization that are often derived from implementing a quality management system:

- Leadership: for establishing unity in purpose and direction, we need leaders in education. Senior leaders provide: systematic documented best practice, systematic assessment and review of processes, systematic improvement of school processes, and they are responsible for maintaining the value of assets.
- Understanding stakeholders: the primary beneficiaries are students and the secondary beneficiaries are parents, the marketplace, and society in general.
- Factual approach to decision making: the analysis of data and information is fundamental for effective decisions and actions, and the data should include students' and other stakeholders' needs, process control limits, performances measures, and changed values. Also, good data must be accurate, available, reliable, consistent, timely, current, and standardized. Measurement of students' performances, employee data, the learning process, support services, and stake holders' satisfaction are the basics for a quality system.

• Involvement of people: Teachers, administrators and staff are an educational system's assets for maintaining and producing the intellectual capital and for their efficiency, their skill, knowledge and attitudes should be focused by reliable methods, measurable objectives and objective evidence.

• Process approach: efficiency in learning would be achieved more efficiently by managing related resources and activities as a process. Via a process, the value of whatever enters the education system can be changes; for instance, ignorance becomes knowledge. The quality system should be designed to make change in value, and improve and control the value. It can be said that all work in an education system is composed of processes, these processes often interact with each other, and the results of an educational system are the results of a process.

• Continual improvement: improving continually in results and processes must be a permanent objective in an educational system (Johnson & Golomski, 1999, p.471).

It is worth mentioning that according to current views about quality in higher education, quality assurance tends to be considered to favor the institutional aspects rather than the student aspects of quality issues, and lean more on an *accountability-led view* rather than the *improvement-led view*. Therefore, many ideas about transforming recent practices have been proposed and they try to focus on student learning, which is viewed as "the heart of quality" in education (Chung Sea Law, 2010).

Up to here, the various concepts and approaches for quality in higher education has been discussed, while the concept and function of "*quality management*" also needs to be addressed at this point.

Here, an example can help us to see quality management from a better perspective. Quality management division’s task is to measure different indicators in an institute. It is similar to what a laboratory does when experts in a medical laboratory do the tests and measure different elements in a person’s body, while it is the doctor’s job to interpret these measurements and indicators and then diagnose the problems.

Hence, quality management division’s job is to evaluate quality indicators (defined by various management and decision making parties), and then, it is up to managers and other decision making parties (either within or outside of the organization) at different levels of the organization to decide about the accepted/required measurements and scores for these indicators. It is due to this fact that in different universities (either online or conventional), they try to achieve their own goals, while these goals and aims are different in each institution. Therefore, the indicators for quality would be measured and evaluated differently in various organizations, and it can even vary for different programs within one university.

For instance, in an online university, there can be a program for people who want to learn new things for their jobs and another online university that offers its programs for people who do not have access to a conventional higher education. In the first program, the flexibility and being up-to-date would be the university’s priority, and in the other university, presenting a complete program compatible with the same program in a conventional university can be the main objective and aim. Therefore, quality managers (as a group of key members of the organization who are assigned for this task) need to create a measurement and evaluation system based on assigning key indicators and prioritizing them, and developing this feature of quality management in an online university is the main objective of this paper.

For examining more dimensions of quality management in higher education further, in the next part, some of the quality models, along with some of the standards and awards for quality in educational institutions, which are known practices in quality management systems, would be discussed, and then, the indicators and methods for measuring quality in education, presented by various scholars, will be offered.

1.5.1. Quality models. As the aim of this study is to introduce a system for managing quality in online universities, therefore, we need to examine some of the existing quality models in education.

For reviewing the main quality models for educational systems and to have a better understanding about them, Cheong Cheng and Ming Tam (1997) examined 7 models of quality in education. These 7 models are considered the main models and still are discussed in literature (See: Asif, Raouf, & Searcy, 2013). Cheong Cheng and Ming Tam (1997) first examined these models and presented a summary of these models' conceptions and indicators, along with each model's conditions for model usefulness, which is shown in *table 3*. Then, after discussing these models, they concluded that people traditionally tend to use these quality models separately while, for managing quality - especially from the system perspective - these models are interrelated. For understanding the interrelatedness among these models, the authors state that the process model, for instance, ensures a fruitful learning experience, along with smooth and healthy internal processes, which are critical elements in achieving stated goals and producing high quality educational outcomes. Then, achieving the stated goals can bring satisfaction to the concerned constituencies, while satisfaction is the main element of the satisfaction model, and so on (Cheong Cheng & Ming Tam, 1997).

Cheong Cheng and Ming Tam (1997), furthermore, clarify that it is common for every educational institution to try to achieve its own criteria of education quality, while, logically, it is hard to achieve all the quality criteria simultaneously, due to all the limited timeframes and environmental constraints. For instance, some educational institutions may focus their attention on the acquisition of scarce resource input, and some may focus on the management of the internal process or learning strategies. The fact is that when some criteria of education quality are strongly emphasized, and energy and resources are mainly concentrated on their fulfillment, undoubtedly, other aspects of quality will tend to be neglected. To avoid this problem, practitioners need to be aware of this issue and develop long-term strategies to handle this problem and try to achieve education quality according to all the multiple criteria, even if it is not possible to do it at the same time (Cheong Cheng & Ming Tam, 1997).

Hence, managing quality is about covering a broad perspective of various strategies and criteria at different levels and in different directions, while holding onto one quality model which means that we only have a limited number of criteria and a narrow view regarding what really is happening in an educational system. Then, it is important to consider a system of multiple criteria, which cover all aspects of quality management.

The aim of this study also is to develop a quality management framework for an online university's educational system, by introducing *a chain process model*. And the question here is that while, in quality management literature there are various quality models in education (in general), why do we need to examine this matter again and develop a new model? The answer could be that none of these models have been able to cover all the aspects of a quality management system and each of them emphasizes on one or only a few aspects for managing quality in education. Obviously, this study would not - and cannot - claim to cover all these aspects too, but it can be an attempt to shed some further light on this matter and examine it from a new perspective. So, by introducing *the chain process model* in the *Discussion* section, the aim is to introduce quality criteria based on actual tasks within the long-term strategy planning in the university in order to cover the main aspects of quality management in an educational system.

Table3.

Models of Educational Quality (Source: Yin Cheong Cheng & Wai Ming Tam, 1997)

	Conception of education quality	Conditions for model usefulness	Indicators/key areas for quality evaluation (with examples)
Goal and specification model	Achievement of stated institutional goals conformance to given specifications	When institutional goals and specifications are clear, consensual, time-bound, and measurable When resources are sufficient to achieve the goals and conform to the specifications	Institutional objectives, standards, and specifications listed in the programme plans, e.g. academic achievements, attendance rate, dropout rate, etc.
Resource-input model	Achievement of needed quality resources and inputs for the institution	When there is a clear relationship between inputs and outputs When quality resources for the institution are scarce	Resources procured for institutional functioning, e.g. quality of student intake, facilities, financial support, etc.
Process model	Smooth internal process and fruitful learning experiences	When there is a clear relationship between process and educational outcomes	Leadership, participation, social interactions, classroom climate, learning activities and experiences, etc.
Satisfaction model	Satisfaction of all powerful constituencies	When the demands of the constituencies are compatible and cannot be ignored	Satisfaction of education authorities, management board, administrators, teachers, parents, students, etc.
Legitimacy model	Achievement of the institution's legitimate position and reputation	When the survival and demise among education institutions must be assessed When the environment is very competitive and demanding	Public relations, marketing, public image, reputation, status in the community, evidence of accountability, etc.
Absence of problems model	Absence of problems and troubles in the institution	When there is no consensual criteria of quality but strategies for improvement are needed	Absence of conflicts, dysfunctions, difficulties, defects, weaknesses, troubles, etc.
Organizational learning model	Adaptation to environmental changes and internal barriers Continuous improvement	When institutions are new or changing When the environmental change cannot be ignored	Awareness of external needs and changes, internal process monitoring, programme evaluation, development planning, staff development, etc.

1.5.2. Standards and awards. Regarding managing quality, there are also many different standard systems for quality assurance in educational systems; such as, BS5750 (for Britannia's education system), ISO 9000 series and Total Quality Management (TQM). These standard systems are well-known, and as there are various discussions and opinions regarding using these methods and standards in education systems, here, as a part of our discussion about quality management in higher education, we also need to examine them.

Doherty (1994) states that a quality assurance standard, in general, requires:

- “Top-down commitment;
- A strategic plan with goals and objectives, all understandable and possessed by all staff;
- Identification of resources to deliver the plan;
- Regular review of the training plan;
- Training and development throughout the employee’s entire career;
- Evaluation and audit of the training programs” (Doherty, 1994, p.13).

Doherty (1994) also talked about these standards in more details. He clarified that BS 5750 is a British standard, ISO 9000 is International, and EN 29000 is a European standard. He pointed out that these standards are capable of interpretation for a wide range of services, although, they have been written with manufacturing in mind. Also, in order to use them in each institute we need to interpret them, and relate them to our own quality aspiration (Doherty, 1994). As an example of these quality standard systems, here, a short discussion about TQM would be presented.

As an attempt to find a suitable quality management system for education, some scholars during the 1990s were trying to adopt *Total Quality Management (TQM)* for educational systems. To be able to do so, they needed to consider the differences that exist between the original TQM concepts - which was for businesses in general - and adopting it for education systems while there were others who, based on these differences, believed that TQM is not a good quality management approach for education.

In this regard, Doherty (1994), states that, in general, the main issue in implementing TQM is that every function and every individual in every level of the organization must be involved in this process. Then, he summarizes the main characteristics of TQM as:

- ✓ The most important issues are the customers' requirements and expectations.
- ✓ What the producer specifies is not quality, but what meets the customers' need is quality.
- ✓ The effectiveness of internal client chains defines quality to the customers.
- ✓ The hierarchy level between top management and the bottom line shouldn't be more than four levels.
- ✓ Implementing small-scale incremental activity is the main key for having continuous quality improvement.
- ✓ Leadership from the top and complete and total commitment from management, having a long-term commitment to implementing TQM, staff appraisal for development, having staff commitment and participation based on training and education, and teamwork are essential issues for implementing TQM.
- ✓ Organizational transformation to *quality culture* is the key aim.
- ✓ It is needed to recognize individuals' or the team's good performance.
- ✓ For underpinning the system, benchmarking and the measurement of change is needed.
- ✓ For managers, getting involved and getting out is very important (Doherty, 1994).

While, there have been scholars who favored the adoption of TQM in educational institutions, there have been many arguments indicating that TQM (or any other business quality standard systems) is not a suitable quality management standard system for educational institutions.(See: Green, 1994, and Barbera, 2004) One main argument states that TQM is mainly based on a customer's requirements and satisfaction (as it can be seen in Doherty's explanations) while in teaching - learning processes, identifying customer, product specification, and even the satisfaction indicators is not an easy task. At the same time, Tribus (1994) explains that TQM is not a suitable quality system for educational organizations, as the students are not products and the school is not a factory (Tribus, 1994, as cited in Doherty 1994).

Later, Chung Sea Law (2010) explained that during the 1980s, TQM was produced as a result of the market ideologies and the managerialism (which accompanied these ideologies). Then, after the education reform, many higher education institutes have tried out the TQM, as an attempt to emulate the quality success (which was found in some commercial and industrial settings), and to enable the institutions to cope with the increasing financial pressures and the fierce competition in sectors after reform (Chung Sea Law, 2010).

As another argument against adopting TQM in an educational system, Doherty (1994) claimed that 80 percent of problems, inefficiencies, and system weaknesses are the result of bad management, and he quoted from Atkinson (1991) that, "years of neglecting to provide managers and supervisors with the necessary skills cannot be wiped out by sending a team on a series of TQM workshops" (Atkinson, 1991, as cited in Doherty, 1994, p. 21).

Furthermore, Burkhalter, in 1996, reported that by the middle of the decade (1990s), fifty percent of all higher education institutions established some sort of quality-oriented council, while later empirical evidence regarding implementing TQM in higher education, typically, involved a non-academic process such as check writing, bill collection, admission application, job scheduling, and physical plant inventory (Burkhalter, 1996).

Moreover, Koch (2003) suggested, as another evidence to this claim, to look at the round-table discussion in *TQM in Higher Education* in 1994, or Owlia and Aspinwall's (1996) statement in *Total Quality Management*, which indicated the fact that the focus of TQM research in higher education has always been on non-academic activities of higher education institutions (Owlia & Aspinwall, 1996, as cited in Koch, 2003).Besides, Chung Sea Law (2010) stated the same claim and said that empirical support for TQM's successful applications are mainly found in *"non-academic activities,"* and not in core academic activities - especially in teaching and learning (Chung Sea Law, 2010).

Furthermore, Koch (2003), in his paper "*TQM: why is its impact in higher education so small?"*, first, stated that TQM has not been successful in many businesses as well; He quoted from Dar-El (1997, p.5) that "… experience indicated that three out of four [TQM] implementations are an economic disaster", while, Dar-El (1997) believed that despite the huge amount of pages written about TQM, and the millions of hours devoted to its implementation and discussion, a significant majority of failures at TQM efforts can lead us to conclude that there is only sparse empirical evidence which favors TQM (Dar-El, 1997, as cited in Koch, 2003).

Then, Koch (2003) introduced some evidences from Zbaracki's (1998) study, who conducted a survey to find out about the reality surrounding TQM. Zbaracki (1998) explained that managers usually encourage a distorted perception regarding TQM efficiency, although, he admitted that TQM is not without its successes. Zbaracki (1998) believed that after managers invested their organizations and themselves in the TQM notion, they consequently trumpet its successes, rather than admitting to its little achievement - even when there is no evidence or little proof to support this conclusion. Zbaracki (1998) also found that only one in six TQM programs to be successful (Zbaracki, 1998, as cited in Koch, 2003).

Moreover, Koch (2003) stated that surprisingly there is very little concrete empirical evidence concerning TQM in higher education. For instance, he observed that in 1993 and 1994 there were many reviews in the *American Association of Higher Education*, and in 1996 an entire issue in the journal *Total Quality Management* was dedicated to this discussion, while, by looking closer into these reviews, it reveals that they are significant for their focus on TQM processes and implementation rather than on evidence (Koch, 2003).

To investigate why TQM has not been successful in the academic side of higher educational institutions Harvey (1995) further explained that the concept of defining the quality of the product by the customer is at the heart of TQM, and its key ideas originated from management theories which are applied mainly in the industrial sector. Thus, applying TQM in the service sector has not been easy, while, applying it in the educational sector is even more problematic, as the notion of a customer in the education sector is illusive and controversial. Also, as it was mentioned before, the concept of quality varies for various stakeholders, and for an education system, we have different groups as customers with different points of view, while, the nature and purpose of education is very different from other business sectors (Chung Sea Law, 2010).

Koch (2003) furthermore added some other facts to this discussion. He stated that the most important challenges facing higher education organizations are related to questions about curriculum and what should be taught, the use of faculty time, the viability of faculty tenure, the priority of technological innovations in instruction, whether students actually learn in any situation, the impact and validity of distance learning, the division of resources and attention between undergraduate and graduate education, tuition and fee levels, the extent to which institutions should become involved in economic development ventures, campus diversity, alcohol and drug abuse, etc., while, "TQM has had very little of consequence to say about any of these important issues" (Koch, 2003, p. 328).

On the other hand, the most important element in academic culture is the doctrine of academic freedom, which frustrates the introduction of conventional TQM procedures. This freedom means that faculty members have the right to seek truth whenever their search leads them, and profess their disciplines as they see fit, while conducting TQM would influence how professors teach and do research, which is against this freedom. Also, faculty members tend to work alone more than together, and teamwork is one of the keystones of TQM (Koch, 2003).

Additionally, Becket and Brookes (2008) believed that higher education institutions can benefit from TQM in administrative and service functions. This is due to the fact that students, from service and administrative point of view, are the customers, while they cannot be considered as customers in an academic function and teaching-learning process of the universities.

Becket and Brookes (2008) also put some of the limitations for implementing TQM in education institutes as: difficulty in defining outputs, people rather than process orientation, level of acceptance of TQM principles, challenges related to leadership skills, bureaucratic structures, complexity of application to HE, and finally TQM requirement for teamwork/customer involvement is not congruent with autonomy of academic staff (Becket & Brookes, 2008).

Therefore, quality models that have been used in other business sectors (industrial, service, etc.) can be adopted in higher education for administrative and service functions of universities (such as food, accommodation, etc.), as these models are not suitable for academic function. The rule of thumb for differentiating between these functions can be simply as: any task which can be outsourced, belong to service/administration function, and quality models for business (such as TQM) can be used for delivering that task.

1.5.3. Indicators and methods - Definition. Barnett (1992) has a fitting analogy about finding and defining indicators in higher education. He uses some examples from the world of competitive sport. He says, for instance, if we look at swimming and diving, judging quality in higher education is like judging a diver's performance rather than a swimmer's. As, for a swimmer we only need a stop-watch to measure the time that the swimmer covers the specific distance. On the other hand, for judging a diver's performance, we need more indicators, such as numerical indicators, but these indicators are based more on arithmetical measurements. For example, we need to see if the diver enters into the water at exactly 90 degrees or the number of turns that he accomplished before hitting the water along with giving marks for the diver's style and the beauty of his performance, etc. - which reflect a non-numerical aesthetic judgment. Similarly, for finding and defining indicators in higher education we need to do the same, having numerical indicators and defining numerical indicators for other quality features as well (Barnett, 1992, as cited in Doherty, 1994).

Furthermore, he explained that even for numerical indicators in an educational system we need to be careful and look at every result much deeper than just numbers. For instance, if the number of students who wouldn't finish a course is increasing, it could be explained by many different reasons, and by itself cannot be a negative sign; such as, transferring to another program or course. The point is that we cannot dismiss PIs entirely, and by having good PIs and investigating them, we can have a better insight into the quality (Barnett, 1992, as cited in Doherty 1994).

Johnson and Golomski (1999) also talked about how hard it is to have a measurement for quality in higher education. They gave a few examples and explained how the measurement methods - which are used in the academic world regarding publishing - cannot be precise and measure the quality as they claim. One of the measurements is about counting how often a published research has been cited. They explained that it is more likely that a paper from a big and well-known university will be cited more than a paper from a less known institute. Another measurement is about the number of publications in one year, which is problematic for researchers and which need a long time to finish; such as, publishing a dictionary in the Sumerian language which takes 20 years to be complete. Moreover, publishing in community or technical colleges is not the same as publishing in other institutes (Johnson & Golomski, 1999).

Sea Law (2010) described a performance indicator as “an item of information collected at regular intervals to track the performance of a system.” Then, he gave some examples for these indicators in higher education:

- Indicators relating to widening participation: e.g. indicators of a student’s social class and parental education.
- Relating to a student’s progress: e.g. indicators of students’ non-continuation from their first year and return after they have been out of school for a year.
- Proxies of educational outcomes: e.g. indicators of graduates’ employment and job quality (Chung Sea Law, 2010, p. 68).

Sea Law (2010) also mentioned that there is other information which is required for public consumption; such as an institute’s student-staff ratio and the number of students who were hired and found a job immediately after their graduation (Chung Sea Law, 2010).

As the interest on finding educational indicators increased, Borden and Bottrill in 1994 did a wide research and found 250 quality indicators in education, which many scholars have used (Bernard et al., 2004). They explained that one way to describe performance indicators is to differentiate them from other types of measures. For example, in one study done by Dochy, Segers, and Wijnen (1990), they make a distinction between *performance indicators* (*PIs),* *management information*, and *descriptive statistics*. They stated that *descriptive statistics*, as measures, have no "inherent significance" (such as student head count), as they lack both *context* and *worth*. By this definition, worth means that we do not know whether higher values are worse or better than lower values, and context means we do not know how to compare these values to other values of previous times, other statistics, or other groups. Also, *management information* includes qualitative or quantitative data which are related to each other; such as course seat demand in relation to curriculum changes. Thus, this management information has a context dimension, but they lack worth dimension. They also described *performance indicators* as "empirical data …which describes the functioning of an institution and the way the institution peruses its goal" (Dochy, Segers, & Wijnen, 1990, p.72, as cited in Borden & Bottrill, 1994).

So, with this definition, performance indicators are rooted in a goal-driven process and related to both context and time, and thus, they have worth dimension as well. Therefore, we can have a performance indicator, when a statistic or measure can be explicitly associated with a goal or objective, and then, we can indicate the desired level of our institution's performance (Borden & Bottrill, 1994).

On the other hand, there are other scholars who described performance indicators without comparing them to other measures. For example, Cuenin (1986) talked about three types of indicators: *simple indicators, performance indicators,* and *general indicators*. When an indicator provides a neutral description of a process or situation, it is a *simple indicator*; such as, general expenditure. For *performance indicators* we need a point of reference and they are not absolute; they are relative; such as, actual headcount as a percent of an enrolment target, and educational and general expenditure per full-time-equivalent (FTE) student. Finally, *general indicators* are not related to a specific goal or process, and they are opinions, general statistics, and survey findings; such as the overall six-year graduation rates for universities (Cuenin, 1986, as cited in Borden & Bottrill, 1994).

As Cuenin (1986) explained, the same measure may serve as a statistic or general indicator as well as a performance indicator. We can have the ratio of graduate student FTEs to total student FTEs as management information (when it is presented as a normative comparison or a time-series trend), and the same information can be a performance indicator (while the institution is explicitly attempting to decrease or increase the proportion of graduate instruction) (Cuenin, 1986, as cited in Borden & Bottrill, 1994).

By considering these definitions and categorization for performance indicators, we need explicit points of reference. These points of references are norms or criteria for judging the worth and setting context. Davies (1993) stated that there are four possible resources for these points of references: *theoretical ideals and norms, specific competitors, stated goals,* and *past performances*. While the choice of a reference point is complex, it is the essence of strategic and operational planning, which means that these choices are about what can be true now or become so in the future. Therefore, it can be said that performance indicators essentially are planning tools (Davies, 1993, as cited in Borden & Bottrill, 1994).

Moreover, another function of performance indicators is to reduce the complexity and volume of data. It refers to the fact that by using performance indicators for monitoring a program or institutional performance, or making decisions in institutes, we can highlight the most important elements among the whole existing data and information. Nonetheless, we need to avoid “oversimplification,” which means reducing our goals to “what we can measure” (Borden & Bottrill, 1994).

Although, performance indicators for higher education can be developed for different levels (such as: an entire country, a state, a college or university, or for a department within a college and an individual course or faculty member), the greatest opportunities along with the greatest problems arise at the institution and department level. This is due to the fact that at the institutional or department level, we have the basic operational processes, which are shaping and executing teaching, research, and service. Performance indicators at higher levels would serve for accountability purposes, while in lower and operational levels, they can serve for improvement purposes (Borden and Bottrill, 1994).

1.5.4. OECD: a source for quality indicators in higher education. One of the main sources, which provide statistics and insights about quality indicators in Higher Education, is the Organization of Economic Cooperation and Development (OECD). OECD collects statistics information about the development of 25 industrialized democracies development in general, and education is one of the subjects in these reports. As it is a well-known practice, some of the scholars use its indicators and statistics for their studies.

Quality in OECD is defined as “the distance between an objective and a result, with the implicit assumption that quality improves as this distance shrinks” (OECD, 2006, p.262), and quality assurance would be defined as: “a process of establishing stakeholder confidence that provision (input, process, and outcomes) fulfills expectations and measures up to threshold minimum requirements.” Also, time as a dynamic aspect would be added to this definition. So, according to these definitions we have two main keys for defining and assuring quality: *process* and *stakeholders* (Harvey, 2004-2007, as cited in OECD, 2006, p. 262).

These two main concepts are from two main schools of thought for defining quality in education. According to one view, quality is attached to a context with references to the quality assessment, academic programs, student intake, the student experience, teaching and learning, and program design. And in another view, quality is related to a variety of stakeholders with an interest in higher education (such as employers, students, academics, government, and society). Many scholars believe that in this view – which defines quality regarding stakeholders' concern and view - there is a serious conflict among these views about quality, as one of them states: "The problem is not a different perspective on the same things, but different perspectives on different things with the same label" (OECD, 2006, p.262).

OECD for quality in education, while considering this "multi-dimensional matrix of quality", defines 5 key aspects:

- Exception: quality is defined as terms of excellence, passing a minimum set of standards;
- Perfection, with quality focusing on the process and aiming zero-defect;
- Fitness for purpose, where quality relates to a purpose defined by the provider;
- Value for money, where quality focuses on efficiency and effectiveness by measuring outputs against inputs;
- Transformation, where quality conveys the notion of a qualitative change that enhances and empowers the student" (OECD, 2006, p.262).

Some scholars, also, summarize these 5 aspects into two main aspects as:

❖ "Quality assurance for accountability: characterized by an external locus of control and associated with a centralized administration, structures and external auditors measuring quantitative indicators of success;

❖ Quality assurance for improvement; characterized by an internal locus of control and associated with facilitative administrative structures which use peer review to assess more qualitative indicators of success" (OECD, 2006, p.263).

According to OECD report (2006), there is a diversity of approaches in this regard, which are designed to *monitor*, *maintain* and *enhance* quality in education which can be defined as:"

- Accreditation: the establishment of the status, legitimacy or appropriateness of an institution, program or module of study.
- Assessment (evaluation): evaluating the quality of evaluating the quality and appropriateness of the learning process: teacher performance and pedagogic approach.
- Audit: checking that procedures are in place to assure quality or standards of provision and outcomes. Checking the extent to which an institution or program is achieving its own explicit or implicit objectives, asking, "are your processes effective?" and its outcome is a description of the extent to which the claims of higher education or the program are correct (such as ISO) (*Table* 4 shows a summary of these approaches) (Scheerens, 2004).

Table 4.

A Summary of different approaches toward Quality (Source: OECD report 2006, p.266)

Activity	Question	Emphasis	Outcomes
Accreditation	Are you good enough to be approved?	Comprehensive (mission, resources, processes)	Yes/No or Pass/Fail decision
Assessment (Evaluation)	How good are your outputs?	Outputs	Grade (including Pass/Fail)
Audit (Review)	Are you achieving your own objectives? Are your processes effective?	Processes	Description, qualitative

Moreover, in this OECD report, the writers explain that in different countries there is always a combination of approaches; such as combining the assessment with an audit (OECD, 2006).

Therefore, based on these approaches, there are different methods. In the OECD (2006) report; it has been stated that the most common method is a four-stage model that includes:“

- Autonomous internal quality assurance system implemented independently
- Self-evaluation
- External assessment by peer-review group and site visit
- Publication of an assessment report” (OECD, 2006, p.283).

Also, this report states that peer-reviews are increasingly used in the evaluation of teaching – learning and self-evaluations are a key element in external evaluation procedures (OECD, 2006).

Additionally, the OECD report (2006) indicates that there are various *instruments* in this regard such as: “

- Guidelines

- Self-evaluation reports
- Site visits (follow the self-evaluation reports)
- Surveys of students, recent graduates, and/or employers
- Performance indicators and statistical data (student progress, dropout and outcomes) (completion rates, time needed for degree completion or assess student progress, dropout rates, especially after the first year, graduation rates, destinations and employment rates of graduates in specific fields of study)" (OECD, 2006, p. 284).

It can be seen that OECD perspective methods and instruments are directly related to stakeholders. It also has been clarified that some argue that accountability and improvement are incompatible, while some say these two can be combined in a balanced strategy. Stensaker (2003) clarifies this conflict by saying that internal processes are related to improvement, while external processes are associated with accountability. Also, it can be said that the practical implementation of quality assurance processes is important to successfully combine the improvement function of quality assurance and accountability (Stensaker, 2003, as cited in OECD, 2006).

In all these frameworks and models, we are considering the education components of an educational system, and in this discussion, we do not talk about the business part of education institutes.

For understanding the indicators, the OECD Education Indicators project (1998) uses 6 categories for indicators: "

A. The demographic, social and economic context of education (e.g., literacy skills of the adult population)

B. Financial and human resources invested in education (e.g. educational expenditure per student)

C. Access to education, participation and progression (e.g. overall participation in formal education)

D. The transition from school to work (e.g. youth unemployment and employment by level of educational attainment)

E. The learning environment and the organization of schools (e.g. total intended instruction time for pupils in lower secondary education)

F. Student achievement and the social and labor-market outcomes of education (e.g. mathematics achievement of students in 4th and 8th grades and earnings and educational attainment)" (OECD 1998, as cited in Scheerens, Luyten, & van Ravens, 2011, p. 39).

Then, Scheerens, Luyten, and van Ravens (2011) explain that these categories can be classified based on their framework and its main components: *input, context, process, and output/outcome*. As category A contains a *context* domain, category B refers to *input* indicators. The *process* dimension can fit categories C, D, and E, while category F is for the *output/outcome* dimension. (Scheerens, Luyten, & van Ravens, 2011) *Figure 9* illustrates the overall framework used in the OECD-INES project, which (as Scheerens and his colleagues explain) is an example of system level application (Scheerens, 2004).

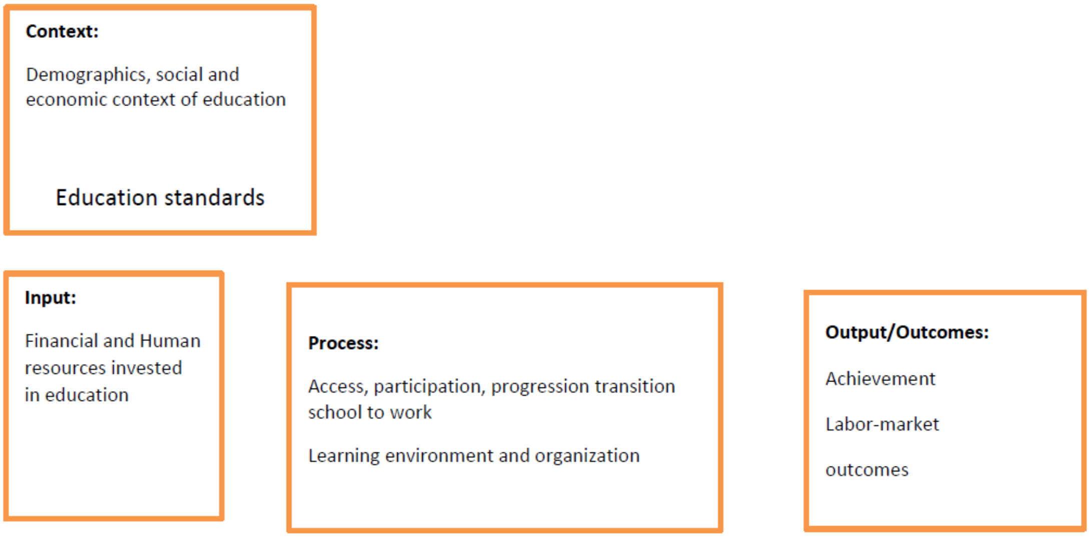


Figure 9: Ordering of the OECD-INES education indicator set, according to a context-input, process and outcome scheme (Source: Scheerens, Luyten, & van Ravens 2011, p. 40).

1.5.5. A system framework on the functioning education and quality indicators by Jaap Scheerens. In previous sections, we discussed a few points from Jaap Scheerens, and now in this part, we look at some of Jaap Scheerens's studies and framework in more detail, as a suitable source for a quality management system and indicators in education (in general) and higher education (specifically).

Scheerens's work for developing his conceptual framework was started with school effectiveness studies. In one of his early articles, "*process indicators of school functioning: a selection based on the research literature on school effectiveness*" in 1991, he categorizes studies in school effectiveness, and organizes the indicators from these studies within a model of context-input-process-output-outcome together (See: *figure 10*)Then, progressively, he developed a complete framework and indicators for quality in education based on a vast variety of studies in school effectiveness, (See: *figure 11*) (Scheerens, 1991).

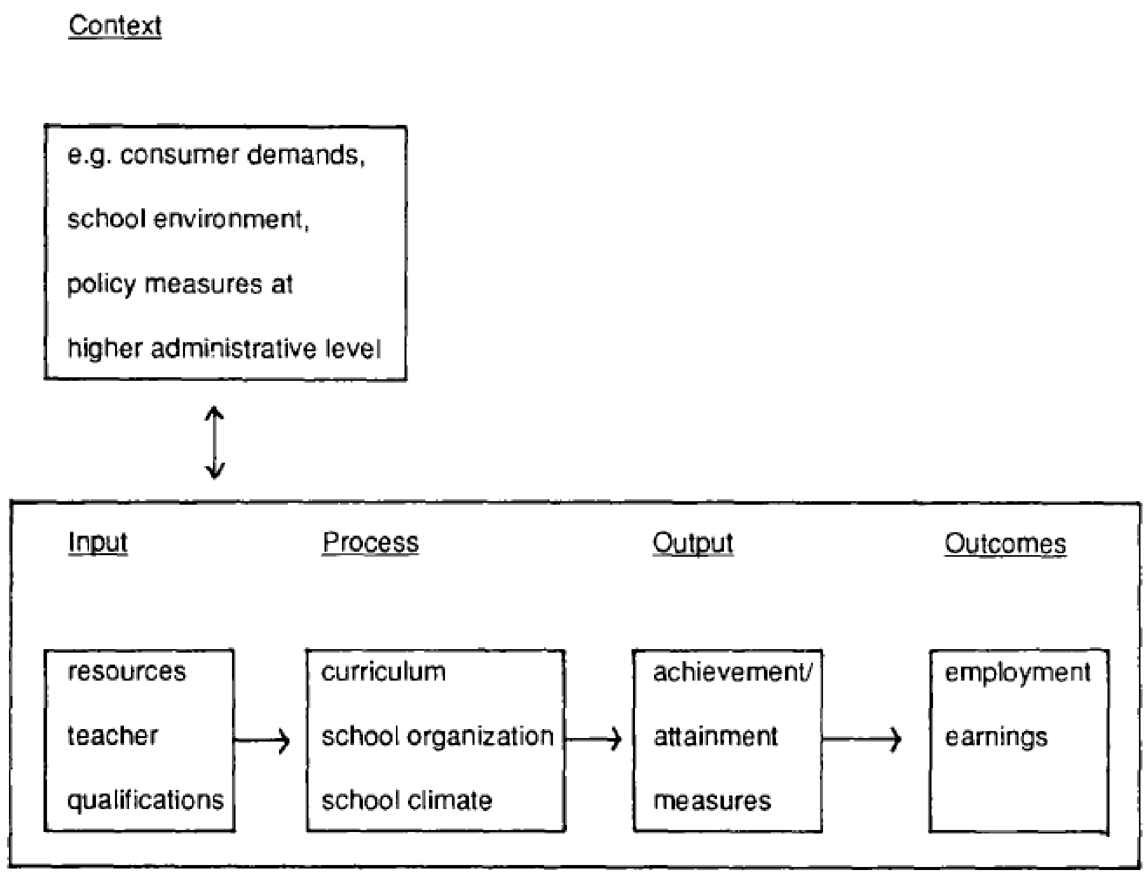


Figure 10: Context-input-process-output-outcome Model of Schooling (Source: Scheerens, 1991, p. 373).

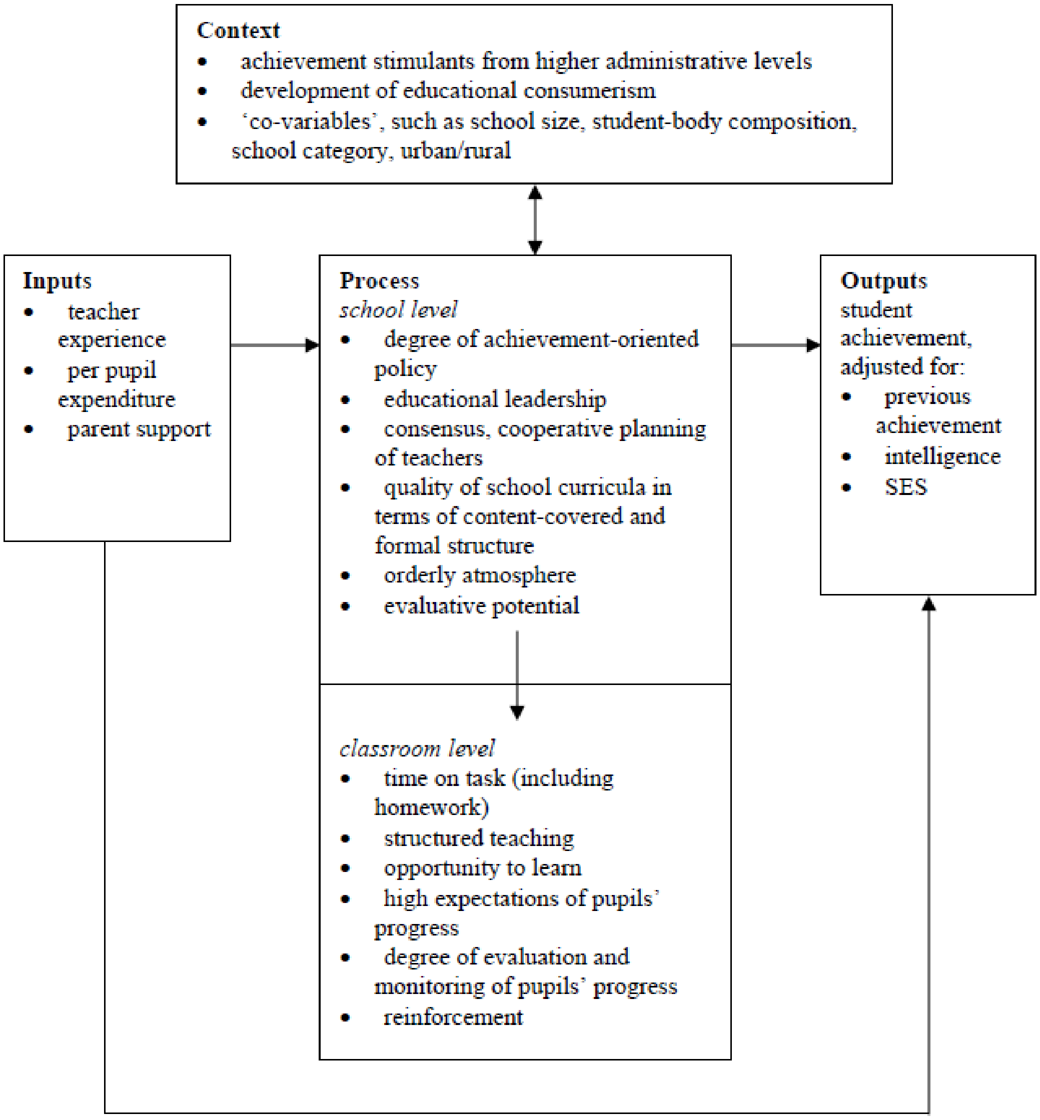


Figure 11: A summary of the findings from school effectiveness research from Scheerens, 1989 (Source: Scheerens, 2004, p.123).

Scheerens (1991) explains how perception over educational indicators has changed over time. He states that a major source of application of indicators has been policy makers at the national level, and then "third parties" and consumers (like private industry) also are seen as users of information that these indicator systems provide. Similarly, individual schools and the education system at a local administrative level use indicator for supporting policy making, and at this level, indicator systems are used as management information systems. While, gradually a new trend for developing educational indicators started, which was "the transition from descriptive statistics to measuring performance", it was "a shift towards statistics of evaluative importance" (Scheerens, 1991, p.372).

Scheerens (1991) explains, furthermore, that at first, the educational indicator systems were descriptive statistics on the state of the educational system, and this includes data on resources and inputs. Since 1982, "context" and "outcome" are given more prominent place in these educational indicator systems, and after, that there was a proposal to redesign the education data system by including "process" aspects of the functioning of educational systems. So, in this new trend, by adding "context" and "outcome" measurements to the traditional measurements of resources and inputs, and, also, by having a growing interest in process-characteristics and in "manipulative input factors, we can see a movement towards, "more comprehensive indicator *systems*" (Scheerens, 1991, p.372).

Later, as the interest in process indicators (as referring to the procedures or techniques which determine the transition of inputs to outputs) increases, we can see a new trend of going from concentrating on a macro-level data (such as: national illiteracy rates or the proportion of pupils that have passed their final secondary examinations) to an interest in what goes on in schools. It means that data is now measured at more than one aggregation level (Scheerens, 1991, p.372).

Moreover, for introducing indicators in an educational system, Scheerens (1991) states that: "Educational indicators are statistics that allow for value judgments to be made about key aspects of the functioning of educational systems. To emphasize their evaluative nature, the term "performance indicator" is frequently used" (Scheerens, 1991, p.371).

Then, he explains that this definition tells us that:

- By defining educational indicators, we present the notion that in educational systems we are dealing with measurable characteristics of these systems.
- As the goal is to measure the "key aspects", we need to understand that it does not provide an in-depth description and only tells us about a glimpse of the current situation.
- Indicators have a reference point which we can judge by comparison (Scheerens, 1991).

Scheerens (1991) also quotes from Herpen (1989), and explains that the origins of educational indicators are economic and social indicators. As Herpen (1989) states, "social indicators of education" try to describe the educational aspects of the population, while "educational indicators" describe the performance of an educational system (Herpen, 1989, as cited in Scheerens, 1991).

Later, for finding indicators in an educational system, Scheerens (2004) explains that "perspective on education quality can be clarified on the basis of a conceptual framework that describes education" (Scheerens, 2004, p. 115).He, furthermore, indicates that describing an educational system, as *a productive system*, is the most frequently used way to conceptualize it, while, in this system inputs are transferred into outputs/outcomes - as was discussed in previous sections (Scheerens, 2004).

Then, he states that for elaborating this basic scheme, there are three steps:

a) "Including context dimension, that functions as a source of inputs and constraints but also as a generator of the required outputs that should be produced;

b) Differentiating outcomes in direct outputs, longer term outcomes and ultimate social impact;

c) Recognizing the hierarchical nature of conditions and processes, putting public education down as just another example of "multi-level governance" (Scheerens, 2004, p.115) (See: *figure12*).

Scheerens (2004) also explains that - by considering the use and composition of indicator system - it appears that the predominant system is the disjoined view. Moreover, the disjoined view can be combined with other views as well (See: *figure 13*) (Scheerens, 2004).

In 2011, Scheerens, Luyten, and van Ravens published a paper titled:" *Measuring educational quality by means of indicators*." In this paper, they summarized indicators for schools, as a basic educational system, based on the context-input-process-output-outcome framework, along with a wider description for these components (Scheerens, Luyten, van Ravens, 2011).

As an important point in this discussion, regarding the understanding of the context components, Scheerens, Luyten, and van Ravens (2011) explain that the impact of "context" is the one between "antecedent" conditions and "malleable" conditions. Antecedent conditions are known as "given" environmental constraints which already "exist", and they are conditions like the background characteristics of students or, in a higher level school size, while malleable factors are in the hands of people who are involved in educational systems at different levels, such as, national policy planners, local constituencies, teachers and schools managers. Besides, sometimes differentiating between these two types of conditions and factors is not clear. For example, in the short term, school size can be seen as an antecedent condition, but in the long-term when policy makers, at any level, change this condition, it would be a malleable factor.

Also, as another example, the average socio-economic status of students in schools can be seen as a “given” condition, but in one school by choosing an explicit recruitment, and having special selecting and admission policies for controlling this condition, it would be an antecedent factor (Scheerens, Luyten, &van Ravens, 2011).

Another important point here is that not only, in the center of the productivity and effectiveness interpretations of educational quality are outcome indicators, but also, they play an indispensable role in assessing the efficiency, equity, and responsiveness of schooling. For measuring educational outcomes, Scheerens, Luyten, and van Ravens (2011) explain that a distinction should be made between output, outcome and impact indicators. A standardized achievement test, is a good example for output indicators, which is used for student assessment, while is seen as the more direct outcome of schooling. Impact indicators can be defined as indicators for measuring the social status of students who achieved certain levels of educational attainment. And for differentiating between outcome and output indicators, we need to look at the degree to which outcome measures are tied to an educational content or we can see that they are relatively content free (Scheerens, Luyten, &van Ravens, 2011).

Scheerens, Luyten, and van Ravens (2011), then, summarize the main indicators on educational quality with more details. *Table 5* shows the summarized table adopted from this paper.

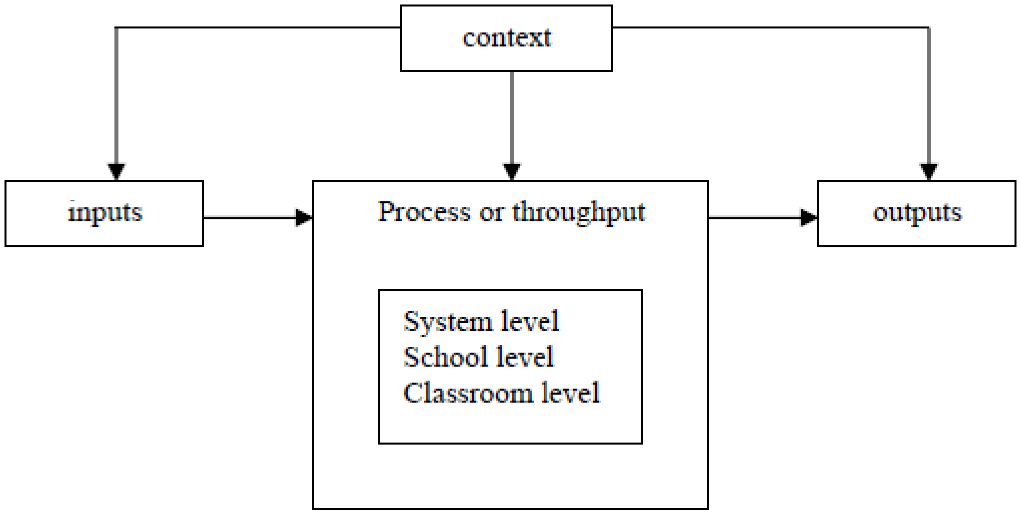


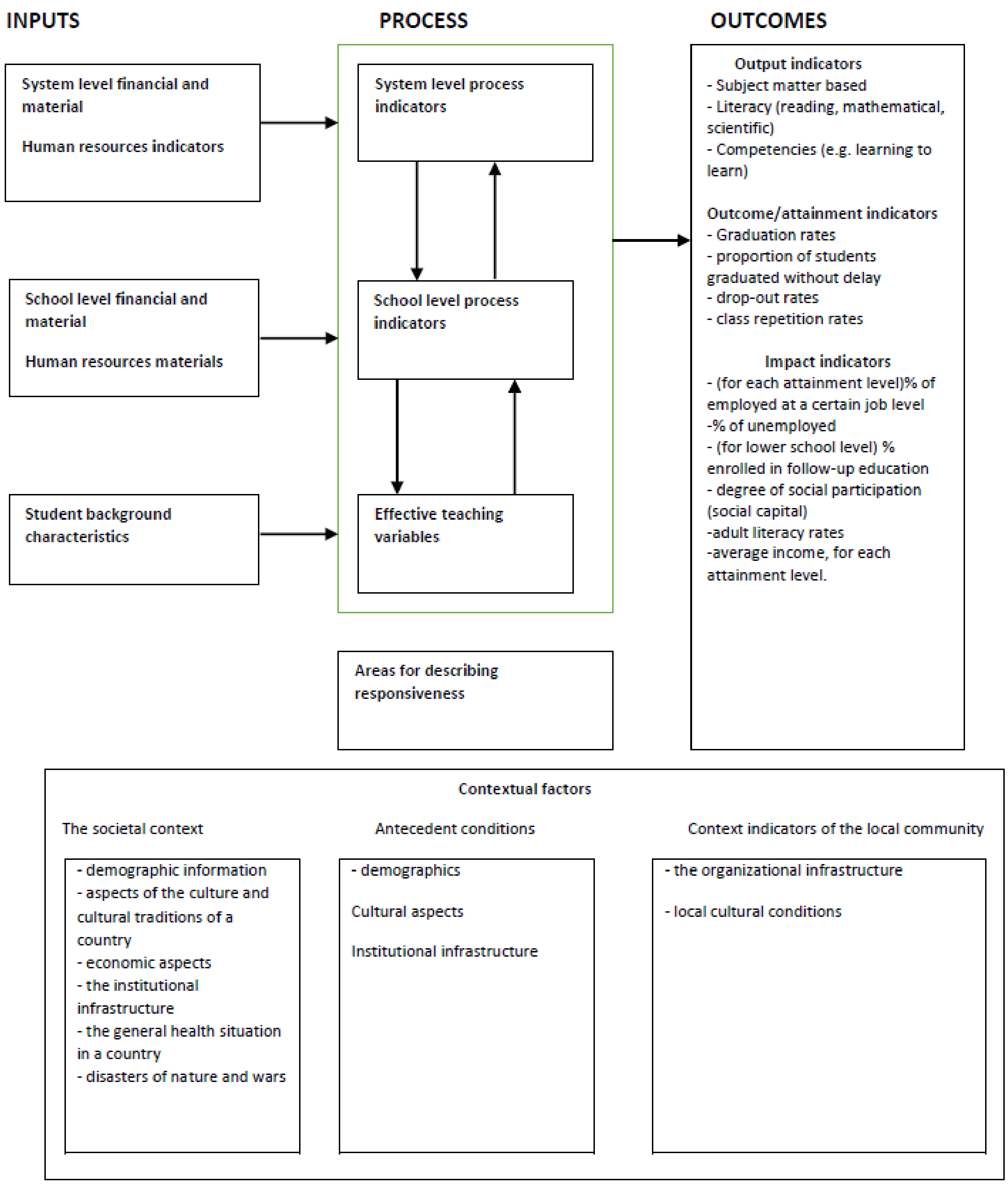
Figure 12: A basic system model on the functioning of education (Source: Scheerens, Luyten, &van Ravens, 2011, p. 36).

Figure 13: Categorization of system-level education indicators (Source: Scheerens, 2004, p. 118).

Table 5.

Synthetic overview of educational input, process, outcome and context indicators

(Source: Scheerens, Luyten, van Ravens, 2011, p. 49)



As in this study, the aim is to find the best suitable quality indicators for quality management in online universities. Therefore, after these introductory parts about distance education, quality concepts, and indicators in education, in general, in the next part, as the last part in the literature review, will discuss some issues regarding the quality management in online education.

1.6. Quality in Distance Education

For the literature review's last part, and the next step for defining a quality management system and its indicator for online universities, a short discussion regarding quality in distance education will be presented. In this part, mainly, some issues, which are particularly problematic with addressing quality in distance education systems will be examined.

It was mentioned in the introduction that there has been a growing recognition of the worth and capacity of distance education among the larger educational community, which led to more efforts for defining and theorizing distance education. Though distance education can be seen as a new model of education, it is "*education"* and the only real difference between distance education and face-to-face education is that, in distance education, the majority of communication between learners and teacher is meditated while it is not the case in a face-to-face model (Garrison, 1993).

On the other hand, the rush of some educational institutions to offer online courses can raise some issues concerning the quality in these courses. Barbera (2004) argues that the definition of quality should be defended based not on organizational and structural topics, but based on academic achievements. And these academic achievements can be defined as the knowledge-building processes, which are experienced by the students. Therefore, the main result of an academic process is the knowledge gained, and its quality must be assured (Barbera, 2004).

In the early stages of research in distance education, the debate about distance education often was reduced to two main issues: *access* and *quality*. This debate is a reflection of two different philosophies with different assumptions regarding the viability and purpose of distance education. One view assumes that when it comes to quality standards, distance education cannot approach or simulate conventional face-to-face education. The other view assumes that distance education is an approach which would be defined primarily in terms of access issues while, from a practical point of view, researchers believed that access and quality should be considered and balanced during the designing and delivering a distance education program. Fortunately, with new communication technology, the access issues have been changed; such as the image of the solitary and independent learner (Garrison, 1993).

Also from a practical point of view, also, online education is very interesting for people who want to study throughout their lives or for who do not have access to conventional education. However, these programs can fail to meet the promises made, if they focus on: a) the prevalence of aesthetic and technology criteria over education criteria, b) the confusion between the actual training process - which is a knowledge building process - and merely supplying information, c) a dominant superficial attitude in many distance education proposals, as a result from those two aforementioned factors (Barbera, 2004).

From another perspective, likewise, the danger in teaching a course in a distance program is to remain within the dominant paradigm of prepackaged and prescribed course materials and, simply, see and use the two-way communication as some optional "*add-ons*". It means that using new technology does not mean to carry out the same old activities faster and simpler, but it means that the activities should be changed to adopt this way of delivering the course and program (Garrison, 1993).

Barbera (2004), furthermore, mentions a few errors that can happen in virtual contexts in the application of quality criteria. One error is to apply the practically exact reproduction of quality models of business to education; neither the content nor the form of these business models for quality can be adopted to educational environments. As the goals in educational and business contexts are different and they require different quality models. Another error, which somehow is related to the previous one, designates that, as the core of many quality evaluations in education is user satisfaction, which in this case is mainly students' satisfaction, it cannot be an accurate indicator, and it is not sensible to base all the dynamics of such a complex and complicated system on the students' opinion and satisfaction (these issues have been discussed in previous sections when we discussed the TQM and other standards and their adoption in education) (Barbera, 2004).

An important misconception, as another error mentioned by Barbera (2004), is about the cost of distance education, which is assumed to be less expensive. Nevertheless, when it is about quality education, it cannot be the case. Technology as a transmission for contents along with training and supporting skilled staff can be costly as well (Barbera, 2004).

Another error comes from the quantification of quality in multimedia systems. This means that the quality of the production of the material or the design, which allows for true support for the student, is less important than the evaluation of the quality of the resources, which is based on the number of different paths of interaction with the user of a course (such as visual, audio, written, etc.) (Barbera, 2004).

Additionally, Dick, Carey, and Carey (2009) in their book, "*The Systematic Design of Instruction*", talk about another common problem in e-learning or distance education courses in designing the course and choosing the media for delivery. They, first, describe an online course as: when students are guided by an instructor through textbook, online content, class activities (such as online exercises, questions, discussions, projects), and interaction with other classmates. Then, in such an environment, if the students' achievements, attitudes, or completion rates are not up to desirable levels, the instructor or course manager would come up with two possible conclusions. One is to say "E-learning is not for everyone", and simply make no change at all. Another conclusion would be admitting that there is a problem in designing or delivering the course and trying to find out the reason, and then, making changes in the course content and activities. When the instructor or course manager looks into the course and tries to improve it, it shows that the course design and its delivery are seen as a systematic process; as in systematic process every component is crucial to successful learning, and *the instructor, learners, materials, instructional activities, delivery system, and learning and performance environments* interact and work with each other to bring about desired learning outcomes. Therefore, changes in one component can affect other components and eventually other learning outcomes (Dick, Carey, & Carey, 2009).

Obviously, this discussion about the existing errors and problems help us to avoid certain views or actions regarding quality issues in distance education. While, to have a better understanding about the quality concept and its issues in distance education further, we will discuss the findings of a few meta-analysis studies regarding a collection of research done in this subject. These meta-analysis studies analyze different aspect of various studies done in distance education by mainly comparing them and then demonstrating some new aspects in this regard. The aim here is to get a better insight into distance education, its effectiveness, and its quality indicators, then, trying to find some of the basic issues in quality management in distance education and use them as a foundation for quality management models which would be introduced later.

One of these meta-analyses is done by Bernard and his colleges in 2004, which is a quantitative synthesis of empirical studies since 1985. In this study, they analyzed 232 studies that compared the effect of traditional classroom-based instruction and distance education on three aspects: student *attitude* (subjective reactions, opinions, or expression of satisfaction, or evaluation of the course as a whole, the instructor, the course content, or the technology used), *retention* (the number or percentage of students who remained in a course out of the total who had enrolled), and *achievement* (standardized tests, researcher-made or teacher-made tests, or a combination of these). They claim that by entering three clusters of study features - *research methodology*, *pedagogy*, and *media* - into weighted multiple regression, it revealed, in general, that it is the methodology that accounted for the most variation followed by pedagogy and media, which suggests that Clark's claim (1983, 1994) about the importance of pedagogy over media, is fundamentally correct. They quote: "a medium should be selected in the service of instructional practices, not the other way around" (Bernard et al., 2004, p.35).

Another interesting finding in this study is about synchronous and asynchronous distance education. These two forms of distance education can be described as: Synchronous DE when a DE classroom is dependent on time and place, which means that the instruction proceeds by videoconferencing, or audio-conferencing media. Because, in asynchronous DE, the instruction is not bonded by time and place, it means the instruction proceeds by other media, such as email or chat-rooms, where communication between teacher and students – or among students - does not necessarily occur at the same time (Bernard et al., 2004).

When Bernard and his colleagues compared synchronous and asynchronous distance education by splitting the sample into these two different forms, the results yielded considerably different outcomes on all three measures. In this case, we also need to keep in mind that the studies analyzed in this meta-analysis study are based on comparing DE and classroom instruction, therefore, by splitting the sample into these two forms, we now actually have three forms to compare. In the *achievement* case, synchronous outcomes favored the classroom condition, while, asynchronous outcomes favored the DE condition. For *attitudes,* both mean effect sizes were negative, and the differences were dramatically different for synchronous and asynchronous DE, while favoring classroom instruction. On the other hand, for *retention* (i.e. opposite of drop-out) there were opposite outcomes. Drop-out was considerably higher – compared with synchronous DE - in asynchronous DE (Bernard et al., 2004).

Then, Bernard and his colleagues (2004) believe that by examining the conditions under which students learn and develop attitudes or make decisions to persist or drop-out, in these two forms, it is possible to explain these results. It can be said that synchronous DE is a poorer-quality replication of classroom instruction, therefore, there is neither the individual attention that exists in many asynchronous applications nor the flexibility of place of learning and scheduling, while there is the question of the effectiveness of "face-to-face" instruction, which is conducted through a teleconferencing medium. Although they state that they were unable to determine much about a teaching style from literature, there can be an opportunity for instructors in synchronous DE to become engaged in lecture-based instructor-oriented strategies, which may not translate well to a mediated classroom at a distance (Bernard et al., 2004).

Even Bates (1997) believes that asynchronous DE can more effectively provide interpersonal support and interaction two-way communication between students and instructor and among students, and consequently produce a better approximation to a learner–centered environment (Bates, 1997).

Also, Bernard and his colleagues (2004) , by looking at a few literatures regarding principles of good teaching, state that DE instructors typically need a different set of pedagogical and technical skills to engage in superior teaching practices, which can be applied for both synchronous and asynchronous DE, but as synchronous DE is more like teaching in a classroom, it is possible that adopting new and more appropriate teaching methods is not as pressing and critical an issue as it is in asynchronous DE (Bernard et al., 2004).

Moreover, for finding the answer for the question of "why the retention rate is lower", while attitudes are more positive, and achievement is better in asynchronous DE than in synchronous DE, Bernard and his colleagues (2004) argue that, based on the literature, the drop out in DE courses is generally more than traditional classroom-based courses. Here it does not fully answer the question about asynchronous and synchronous, but partly, it can be said that since the data from students who dropped out before the course ended is not included in these studies, therefore, attitudes and achievement measurements are independent of retention. As well, the different conditions that exist in synchronous and asynchronous DE (as were discussed before) can be the reason (Bernard et al., 2004).

Zhao, Lei, Yan, Lai, and Tan (2005) in their meta-analytical study, *"What makes the difference? A practical analysis of research on the effectiveness of distance education"*, also come up with some interesting conclusions. They argue that, like face-to-face education, all the distance educations are not equal, and we cannot generalize some characters for all the programs and institutes. So, we cannot easily compare them or generalize them. On the other hand, they believe that students with certain qualities can take more advantage of distance education than other students. For example, having a high school diploma for students in a distance program puts them in a better position than those who do not have the diploma (Zhao, Lei, Yan, Lai, & Tan, 2005).

Zhao, Lei, Yan, Lai, and Tan (2005) discuss that interaction is the key to distance education. Whether and how students interact with their instructors and other students seems to be a differentiating quality of distance education regarding learning outcomes. They conclude that there are three important factors in interaction: *media involvement*, *instructor involvement,* and *types of interaction*. They claim that reports show more positive outcomes for distance programs with both synchronous and asynchronous interactions rather than one type only. Also, by taking advantage of new technology - like the Internet - which provides communication between students/instructors and among students, distance education programs, now, can have more positive outcomes. However, using technology has its own advantages, but there are some additional costs with offering both synchronous and asynchronous interactions, as well. First, we need someone to manage and coordinate the interactions, as, we cannot have automatically a meaningful interaction with technology alone, and it is an instructor's duty to facilitate the discussions and answer the questions. Secondly, we need someone to maintain and update the infrastructure of the communications. Thirdly, we need to train both instructors and students to be able to use these communication tools and be familiar with working with communication software (Zhao, Lei, Yan, Lai, & Tan, 2005).

Moreover, they observe that a combination of technology and face-to-face education brings more positive results. And when it is not possible to include a face-to- face component to a program, we can use other tools, such as video conferencing to the program to add some of the features of traditional education as well (Zhao, Lei, Yan, Lai, and Tan, 2005).

Further, they argue, further, that distance education can be more appropriate in certain contents. It means that, the nature of what is being taught in a distance program can have effects on its effectiveness too. For instance, studies show that in computer science, we can have more positive outcomes in distance programs. Moreover, in college-level programs, we can more likely get better results in distance education than graduate level courses. And there is a possibility that this difference rises like it does in distance education, where we can teach knowledge and skills – which are taught at college levels - more effectively than idea and research - which are taught in graduate level and need more discussion and interactions (Zhao, Lei, Yan, Lai, & Tan, 2005).

Also, in this regard, Lockee, Perkins, Potter, Burton, and Kreb (2011) did a qualitative study to analyze standards related to the design of distance-delivered courses in seventeen organizations. They explain that by increasing interest on quality in distance education and discussion about the importance of the effective design of DE courses, many organizations established a variety of standards and criteria which describe the essential qualities of an effective distance learning experience. And, all these different groups and organizations have created sets of requirements and guidelines to serve as evaluation frameworks for DE. Therefore, in their study, Lockee and her colleagues (2011) try to provide insight into the instructional design community, especially, with increasing awareness of the importance of the instructional design process in distance education courses. They state that the purpose of their study is "to present findings of a qualitative analysis of standards related to distance course design, including commonalities and differences among organizations with regard to defining quality distance learning experiences" (Lockee, Perkins, Potter, Burton, & Kreb, 2011, p.1).

Lockee and her colleagues (2011) chose seventeen (17) organizations, both US-based and international, representing a broad range of educational interests which were reviewed for the purpose of their study. They collected data about each organization through a combination of policy documents, website reviews, and phone interviews with instructional clientele and staff members. The majority of their review was comprised by analyzing documents, while phone interviews served as a supplementary capacity (Lockee, Perkins, Potter, Burton, & Kreb, 2011).

In their study, Lockee and her colleagues (2011) find a few issues that are important regarding quality in distance education. They state that a lack of instructional design is noticeable in these organizations. It means that there is no guiding framework for planning and developing a distance course from an instructional design point of view. Then, they observe that in all these institutes there is a comparative perspective about distance education. In other words, distance education is always compared to traditional face-to-face education standards for designing and implementing the courses and its outcomes. This issue arises when we consider student service, as well. Providing service for students needs to be seen from a distance education point of view, which means the support needs to exist at both technological and pedagogical levels (Lockee, Perkins, Potter, Burton, & Kreb, 2011).

Another interesting finding in this study is about mandatory interaction. They observe that in all these distance education organizations, interaction between an instructor and student is mandatory, but the purpose for such interaction is not defined. The point is that we cannot have an effective teaching-learning environment in a distance education course by only mandating the interaction without a clear purpose for that. In addition, media selection is a similar matter that needs our attention too. We need to keep in mind that technology by itself cannot guarantee the quality of a course in distance education, and the media for each course should be chosen based on instructional aims and needs. The same problem arises for faculty training as well, when the focus of training is only from technological proficiency rather than pedagogical preparation for faculty (Lockee, Perkins, Potter, Burton, & Kreb, 2011).

These studies and similar studies talk, mainly, about the factors and aspects in distance education which are essential for quality or would harm it. By considering these factors and issues, for the next step, in finding and developing a framework and the indicators for quality management in an online university, a model of various essential components in a university (in general) will be introduced. Then, these components would be examined in more details considering an online university's features. This attempt is a prior step for finding quality indicators for quality management in online universities, which would be discussed based on a process model in the next section.

2. Discussion

2.1. The main Components of an Online University

In the previous sections, different aspects, frameworks and models for components of a university, mainly from a quality management perspective, were introduced and discussed. In this section, the main discussion is about designing a basic framework that presents the main components for having a functional educational system in a university based on these models and frameworks. This framework is a general one and can be adopted for any university, although in defining each component's functions and tasks further, the focus will be on an online educational system. Also, this section is closely related to the next section, where a *chain process model* for a quality management system in an online university will be introduced, given that these components and their functions are at the core of the *chain process model*.

Figure 14 shows a basic model of these basic components, including: *strategic management*, *the integrity and unity of research and teaching*, *business units*, *various service units* and *academic environment*. The arrows show the relationship (either exchanging information and providing support, or providing services and resources) between these components.

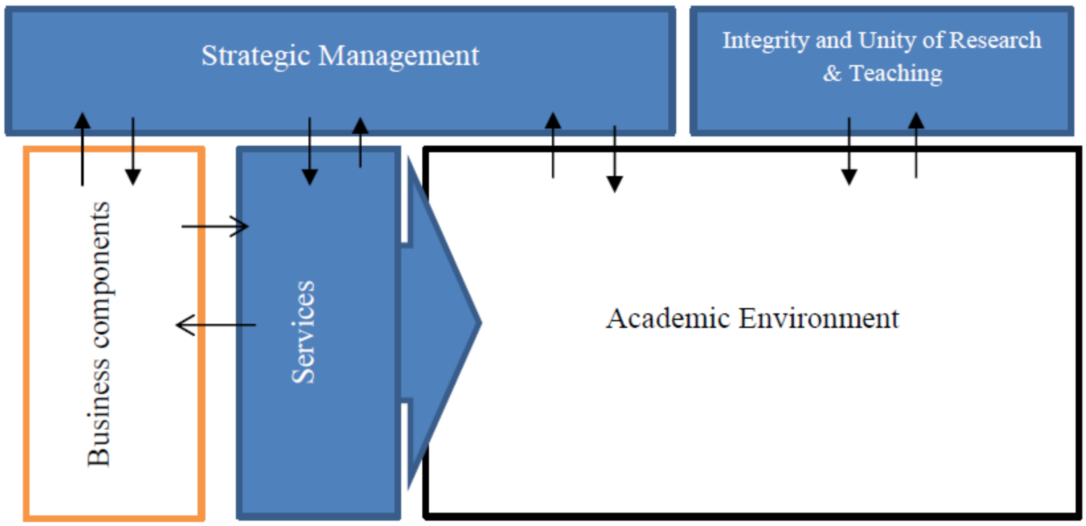


Figure 14. Model of University's components.

This model shows the main components as the building blocks of a university and is a general framework, although each university-has its own organizational structure and divisions that can fit into this framework. The main point here is that in every educational institution, there are tasks and functions that must be done to in order to provide the teaching-learning environment. However, how these functions would be organized in the whole university structure is not the priority here, given that universities worldwide have different organizational structures based on various policies or traditions with their own limitations, obligations, and requirements. The aim of this study-is to investigate the basic indicators suitable for a quality management system in an online university based on essential functions and tasks.

For instance, in designing a course for a distance education program, there are essential functions and tasks that must be done, and which are undertaken either by different units or people depending on the university’s organizational structure. For example, with regards to these functions and tasks, Bates (1999) reports that the University of Alberta has an Academic Technologies for Learning (ALT) unit that supports the use of technology in teaching and learning. This unit is responsible for faculty development, research and evaluation, and instructional design in distance education programs. Another example is the Center for Distributed Learning (CDL) California State University, which is responsible for developing Web-based multimedia modules that instructors can adopt for their own specific approaches in teaching and integrate into their own teaching style; this unit, in fact, does not develop the course itself (Bates, 1999). Therefore, basically different units and divisions would be responsible for implementing various essential tasks, while the main issue here is to investigate what these tasks and responsibilities are and what indicators can be defined from a quality management point of view.

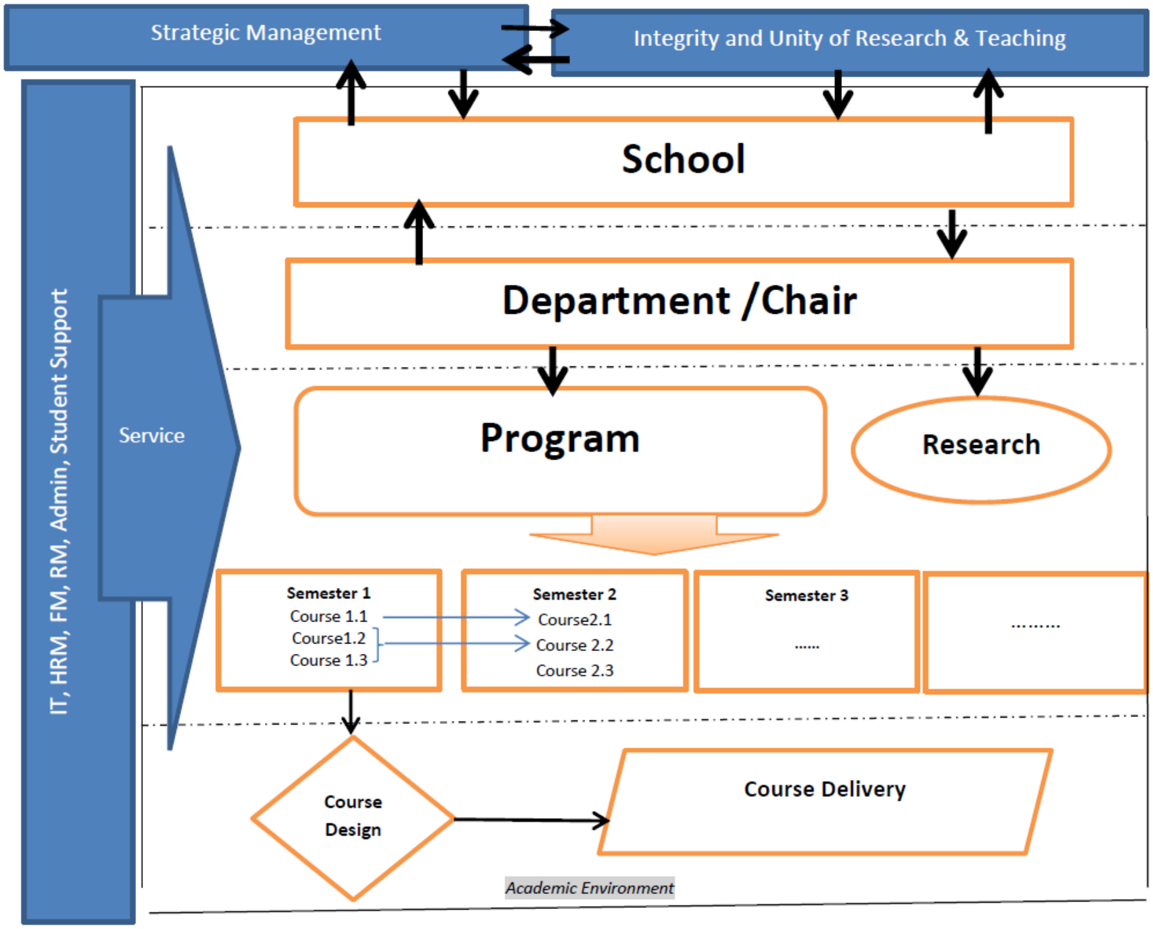


Figure 15. A Model for the Components of a University.

As shown in the model above *(*See: *figure 14*), one of the main components within a university is its *business component*, and as previously mentioned, it contains various units such as *marketing and sales, accommodations, Alumni, fundraising, facilities, healthcare, language centers, building maintenance, study centers, volunteers in public service, trips and entertainments, community engagement activities, etc*. The various units of the business component serve many aims and goals, such as, making money, providing competitive advantages, building a greater reputation, attracting more financial resources, achieving and maintaining good relationships with outside stakeholders, attracting more students and high qualified personnel, collecting information in order to develop a better strategic plan that is based on the needs and wants of a wider range of stakeholders, and so on. As demonstrated in the model, the *business* component has no direct relationship with the *academic environment*, although it works closely with *strategic management* and *service units*.

While the focus in this study is on managing quality in an academic environment and providing a quality teaching-learning environment, the business component's functions and tasks will not be discussed in detail in this study. On the other hand, tasks and functions of various service units, such as~~,~~ *financial management, human resource management, resource management*, etc., which affect the teaching-learning environment directly, will be discussed and presented in detail in this section.

Figure 15 shows the framework in greater detail within the academic environment. It can be seen that in the academic environment, activities are categorized as different levels: *university, department/chair*, *program,* and *course levels*. At the university level, the schools (as a part of the academic environment) interact with higher management parts, which are *the integrity and unity of research and teaching* and *strategic management*. Also, at the school level, only, a direct relationship exists between *strategic management*, *the integrity and unity of research and teaching* and academic environment.

Furthermore, three main dimensions are considered in this framework: *research*, *teaching*, and *service*, since teaching is not the only main scope for a university. The main factor here is that it is important to have strong service and research components along with teaching function, and teaching must be augmented with service and research in order to be effective, since a teaching focus alone, as a limited, one-dimensional focus, could harm the creation of a knowledge-oriented environment in an institution and cannot address the requirements of various stakeholders (Asif & Searcy, 2014).

Here are the detailed descriptions of these components, which are shown in the model:

2.1.1. Strategic Management. Strategic management is responsible for developing the university's strategy by interacting with its various management divisions (such as marketing, human resource, IT, resources, financial, etc.), various stakeholders (students, parents, administrators, companies, organizations, government agencies and policy makers, etc.), and its schools. Strategic management is implemented by gathering and analyzing information while consulting with various stakeholders and agencies to design the most suitable strategy for the university.

Besides, in an academic environment, schools should follow the strategy, policies and standards assigned by the university, while many stakeholders both inside and outside the university can influence these strategies and policies. For instance, when a university is located near many high-tech companies, it could offer special programs to provide a capable workforce for these companies. Also, feedback from both professors and/or students can affect a specific strategy or policy.

Here are a number of processes for strategic planning introduced by Moore and Kearsley (2012):

- "Defining a vision and mission, goal and objectives for the institution or program,
- Choosing among existing options so that the priority goals can be achieved with acceptable quality and the available resources,
- Continuous assessment of changing trends in student, business, or societal demands,

- Tracking emerging technological options that might make for greater efficiency,
- Projecting future resource and financial needs and trying to meet them" (Moore & Kearsley, 2012, p. 175).

Bates (1999) also talks specifically about strategic planning for technology in distance education. He explains that the technology plan must be fitted within the wider plan for teaching-learning, which should have clarified clear short-term action goals for the next few years, a detailed vision statement, implementation strategies or action steps, and measurable or easily recognizable outcomes. Furthermore, this plan-should cover both the technology required for teaching-learning and a technology infrastructure (Bates, 1999).

In this regard, in order to create a tool to collect data and information from various stakeholders and detect changes, especially from outside stakeholders, we can use what Neely, Richards, Mills, Platts, and Bourne (1997) introduced as a "*performance measure record sheet*". Although we are not talking about performance measurement, as it was originally meant by them, we can use this sheet as a sample, which helps us to have a system of collecting data and information from various stakeholders. *Table 6* presents an example of this *performance measurement sheet*, which is modified for its use as a tool for collecting data and information from various stakeholders.

Table 6.

Report sheet for identification of emerging trends in business, various academic fields, new paradigm or technologies (Source: Neely, Mills, Platts, & Bourne, 1997).

Title	Identification of emerging trends in business, various academic fields, new paradigm or technologies
Purpose	To encourage everyone to become involved with the process of identifying emerging new needs and new opportunities,
Relates to	Strategic plan and development,
Target	Filling at least 1 form per month for each component/stakeholder,
Formula	Forms completed and returned,
Frequency	Monthly
Who measures	Strategic management,
Source of data	Various stakeholders (employers, alumni, graduates, funders, labor market, faculty, administrations, government, policy makers, parents, the community, professional and accreditation bodies, etc.),
Who acts on the data	Strategic management and Marketing and sales unit,
What they do	Collecting the forms and evaluate them,
Notes and comments:	This measure will need to be changed within 12 months.

Moreover, another important aspect in strategic management is setting and providing various policies for different tasks and functions within the university. It can be said that policies are the statements about how an organization intends to conduct its work and policies provide a set of guiding principles to help the decision-making process. Policies should reflect the values, approaches and commitments of each institution and its culture, while the procedures describe how each policy should be put into action via a few instructions in the form of checklists, instructions, flowcharts, and forms. These procedures need to outline who will do what, what steps should be taken by them, and which forms and documents should be used**.**

Likewise, Simonson and Bauck (2003) state that a policy is a written course of action- such as, a procedure, rule, statute, or regulation- that would be adopted by an institution to facilitate the development of its programs. Policies in distance education – or in any organization for that matter - would provide a framework for their operation, while the roles and responsibilities are explained by them (Simonson & Bauck, 2003).

Also, they categorized the policies for distance education in seven categories:

1. *Academic:* it concerns the overall integrity of the course and deals with issues like academic calendars, course quality, program/course evaluation, accreditation of programs, grading, credit hours, admission, curriculum review and approval processes. Academic policies safeguard the maintenance of the institutional integrity.
2. *Fiscal, geographic, and governance:* it includes issues like tuition rates, full time equivalencies, special fees, state/province/country-mandated regulations related to funding, service area limitations, out-of-district versus in-district relationships, contracts with collaborating organizations, consortia agreements, board oversight, tuition disbursement, and administration costs.
3. *Faculty:* the key issues in this regard are workloads and compensation, design and development incentives, staff development, faculty evaluation, faculty support, union contracts, and intellectual freedom.

4. *Legal:* the main issues in this area are copyrights, intellectual property agreements, and student, faculty, and institutional liability.
5. *Student:* it concerns student issues like academic advising, student support, library services, counseling, financial aid, student training, testing and assessment, access to resources, equipment requirements, and privacy.
6. *Technical:* it includes issues such as connectivity, system reliability, technical support, access, and hardware and software.
7. *Philosophical:* values, mission and vision are the main issues in this regard. (Simonson & Bauck, 2003).

Although there are different definitions about policies, the core concept is the same; policies are guidelines in various levels and forms that help institutions to develop and work both smoothly and properly.

2.1.2. Unity and integrity of research and teaching. Integrity of research and teaching is another management component in a university. It means that the pedagogy aspect of an academic environment in a university needs to be based on research; and in designing, developing, and delivering any program/course, the latest studies and findings regarding pedagogy and teaching-learning theories should be followed that are specific to each field in each program. Also, for each program/course the recent studies and findings need to be taught or used as teaching materials, as well. Therefore, this component is responsible for managing and harmonizing various activities both in the research and teaching areas and from both inside and outside of the university. For example, the latest methods or principles in educational studies should be adopted in teaching along with teaching the latest findings and studies in specific field in each program.

This unit works closely with schools for harmonizing the activities and providing needed information and knowledge, while receiving their latest studies and findings. In other words, in every university three main features need to be provided: *teaching*, *using research in teaching*, and *doing research* by both teaching students about research and designing various research projects.

This component needs to work closely with strategic management, as all these three features are the main functions of a university. Likewise, strategic management needs to provide essential plans and resources towards implementing them. For example, doing research needs both human resources and financial resources; therefore, strategic management should have a strategic plan to provide these resources for the research projects. On the other hand, being up to date in teaching and using current research in teaching means to have access to the latest studies, which in turn leads to an up-to-date library, which should also be a part of strategic planning.

As a result, this university component should work closely with both strategic management and the academic environment so that the university's teaching and research features remain current and up to date.

2.1.3. Academic Environment. As it is shown in the model (see *figures 14&15*), the *academic environment* is the main part for providing teaching-learning environment as the optimal goal in every university. The academic environment also has different levels: the *schools* are in the university level, then, there are *departments/chairs* at the lower level (which are responsible for academic programs and research projects), and at the lowest level, there are *courses* as the main building blocks for each program (the term 'course' here means a general term that includes all the activities predicted within each program which can be a seminar, a research project, an essay, a lab course, etc.). Each *course* also has two stages: *design* and *delivery*.

At the university level, each school has one or more departments/chairs, and each department/ chair is responsible for, at least, designing and delivering one program along with various research studies. For example, a business school is responsible for designing and delivering different programs for its various fields of study (such as management, finance, economics, etc.). Each one of these fields of study can have a specific department with various chairs, or within a small university there would be only one department or chair. These programs are offered by business schools at different levels, such as Bachelor, Masters, PhD, two-years college certification, etc., and each department chair is responsible for designing and conducting various research projects at different levels for various stakeholders – they can be either inside or outside of the university, or either in the private sector or in government.

It is a common practice that schools and departments/chairs within a university interact and cooperate with each other in their various endeavors as well. For example, the mathematics department/chair is required to provide a number of introductory mathematics or statistics courses for different programs. Also, students from different programs may participate in a course that is offered by one of the departments outside of their school. For instance, students from an MBA program in a business school may take some courses from the computer science department and participate in these courses with other students from different programs and schools.

At the next level, the program level, each program consists of various courses and activities that help students to acquire the necessary knowledge, skills, and information required to finish the program and graduate. These courses and activities are like various pieces of a jigsaw puzzle that are interconnected and together they shape and complete a whole picture. Likewise, each course or activity in a program is part of the path towards achieving that program's goal, while~~,~~ each one of these courses and activities is related to both the program's main goal and other activities in that program, and it comprises part of the total knowledge and skills that a student needs to complete that program. Also, each course or activity has a specific credit, which is a division of the total credits a student needs to complete for graduation. These courses and activities, furthermore, are interrelated in another way, as they can be prerequisite or co-requisite for one another.

Then, at the final level, there are *courses* and for each course, two stages exist: *designing the course*, and then, *delivering it*. The main teaching-learning environment is produced in *the delivery stage*, which is the ultimate objective.

In this study, the focus is mainly on *the academic environment* and the direct activities for providing a teaching-learning environment. Therefore, in this part, various processes in academic environment in different levels are discussed. An important point here is that – as mentioned before – designing and delivering an online program/course is based on a system approach, which means that designing and delivering a program/course consist of a series of interrelated processes which interact with one another and cannot be separated.

2.1.3.1. Program design and development. Every university has its own policies and procedures in designing and developing a program, but each share common factors. Also, universities provide many charts/tables and manuals with the aim that are designed to make this process of developing a program as clear as possible. For example, these manuals and procedures clarify who (as an individual, committee, council, faculty, etc.) should provide the proposal, who should evaluate it, who should approve it, how long this process takes, what information needs to be provided at each stage and by whom, etc.

For instance, at Utah Valley University (UVU) there is a flow chart describing the process for approval and starting a new program. In this chart a period of 14 months is the timeframe given for starting a new program, and different procedures and approvals are described as well (See: UVU Website, https://www.uvu.edu/asc/docs/understanding_the_curriculum_process.pdf).

As a starting point, a proposal with a description of the new program needs to be developed by faculty members or committees within a department; then, this proposal should be reviewed by the Board of Trustees, Dean's council, or any other reference group depending on the university's organizational hierarchy. This proposal mainly includes some of its main points, which are important from quality point of view as well, followed by a lengthy process of consultations, discussions and approvals. This proposal mainly includes some of the main points, which, from quality management point of view, are important.

For example, in Rochester Institute of Technology (RIT) the process for starting a new program starts with a *concept paper*. In this concept paper, required information is categorized in five main subjects:

a) "Description of the goals, needs, and justification for the proposed program;

b) Description of how the program fits with RIT's (or the main institution's) mission and Academic Blueprint Portfolio criteria and characteristics;

c) Indication of specific curricular linkages with other academic programs and associated interdisciplinary connections;

d) Discussion of marketability and future sustainability of program based on input provided by Enrollment Management and Career Services relative to projected enrollment;

e) Description of the impact of the proposed new program on the unit and college resources. Specifically, how the development of this program uses resources already assigned to the academic unit/college (space, faculty/staff, etc.) and the plan for reorganization or re-allocation of resources. A Cost Model Template is required to project revenue and expenses." (RIT website, http://www.rit.edu/academicaffairs/academicprogrammgmnt/new-program-proposal-requirements/stages-rits-curriculum-review-process)

By reviewing these elements, the main concepts for starting a new program can be identified. The first point mentions the need or goal for starting a new program. In other words, how we come up with this idea that we need this new program; for instance, there is a need in our society/community, or the need is within our institution. Then, whether it fits into the institution's mission and criteria should be described. Next step is to clarify the linkage between this new program and other academic programs and associated interdisciplinary connections. Obviously, seeing a program's outcomes is an important issue too, therefore, "marketability and future sustainability of program" should be considered as well. At the end, the allocation of resources must be clarified, since it is important to know how the resources for this new program can be managed without harming other programs in that institution.

Therefore, at the end of decision making process for a new program, these objectives need to be specified:

❖ the least number of students we need to start the program,

- the program’s capacity (enrollment rate),
- the acceptable number of graduates and drop-outs or unfinished,
- the acceptable students’ rating for the program demonstrated in student’s survey,
- the weight that needs to be given to student’s survey in the program’s evaluation, etc.,
- the educational objectives such as the knowledge and skills the students will learn based on the businesses or employers needs and wants,
- the required research projects,
- financial objectives such as the tuition fee revenue, the expenses, revenue from research, etc.

By reviewing AACSB International Quality Issues in Distance Learning, a set of questions can help us to make a list of requirements for designing a program. Here is a list of topics that should be clarified during the program design phase:

Admission requirements:

- Prerequisites for age, experience, academic qualifications, GMAT, language, technical competencies, skills, and knowledge.
- Possible exemptions or course waivers.
- Registration process.

Structure and Delivery:

- Program style (for example it can be lock-step with fixed curriculum and set cohort with prescribed course progression).
- Electives.
- Exiting or re-entering possibilities.

Academic Support:

- ❖ Faculty members who design and deliver the courses.
- ❖ Academic support systems such as counseling, advising, tutoring, and placement.
- ❖ Availability of help–line facility.
- ❖ Accessibility to library materials, databases, and software.

Performance Expectations:

- ❖ Performance expectations placed upon students concerning deadlines, study time requirements, active participation and course attendance.

Interaction:

- ❖ Requirements for interaction between faculty and students as well as between students (how, when, where, etc.).

Completion:

- ❖ Program length (how many semesters or years needed to finish the program).
- ❖ Time limitation for completing the program (if it is necessary).

Technical Support:

- ❖ Technical support requirements.
- ❖ Hardware and software requirements.

Payment Policies:

- ❖ The fee per semester, books, meals, accommodations, Internet access, travel, etc.
- ❖ Expected payment schedule.
- ❖ Policy for reimbursement of fee upon withdrawal.
- ❖ Availability of financial aid/scholarships (AACSB Website).

Moreover, we need to:

- ✓ Define the minimum required academic qualifications that target students should have (Govindasamy, 2001).
- ✓ Provide a list of required books and supplies (Phipps & Merisotis, 2000).
- ✓ Provide detailed information about student support services (Phipps & Merisotis, 2000).

Consequently, quality in developing a new program depends on how good these concepts and elements can be clarified and fit alongside the institution's mission and goal.

2.1.3.2. Program implementation. After a program is designed, *the marketing and sales division* needs to work on promoting it via different methods; such as brochures, website pages, etc. In order to implement the program, all the prerequisites, curriculum, registration process and necessary documents should be clarified and announced. Only then~~,~~ can interested students send in their applications. Those who are accepted into the program can register for the program via the *admission* and *administration* divisions.

2.1.3.3. Course design and development. Moore and Kearsley (2012) point out that *subject*, *content* or *materials* alone would not make a course and that a structure is required for building a course. Although designing a course is a common requirement in both conventional and online education, they are different in many ways. In an online course, design is based on technology and the way technology is used in that course, is obviously different from designing a course that is to be taught in a classroom (Moore & Kearsley, 2012).

Usually, the design for an online course includes: *the learning objectives, the exercises and activities, the layout of the text and graphics, the content of recorded videos and audios,* and *the questions for audio or video conference, in Wikis and blogs, or for interactive sessions by* *online chat sessions*. It also includes decisions about web design, meaning which part should be delivered via which medium, and how the evaluation should be done (Moore & Kearsley, 2012).

One of the tools used for designing a course is Instructional System Design (ISD), which most organizations use. This method emerged after World War II as being more efficient for training needed during the war. It was produced based on several learning- teaching theories: behavioral psychology, system theories and information and communication theory. With this method, the steps to follow are: *Analysis, Design, Development, Implementation, and Evaluation*. *Figure 16* shows a simple model for ISD (Moore & Kearsley, 2012).

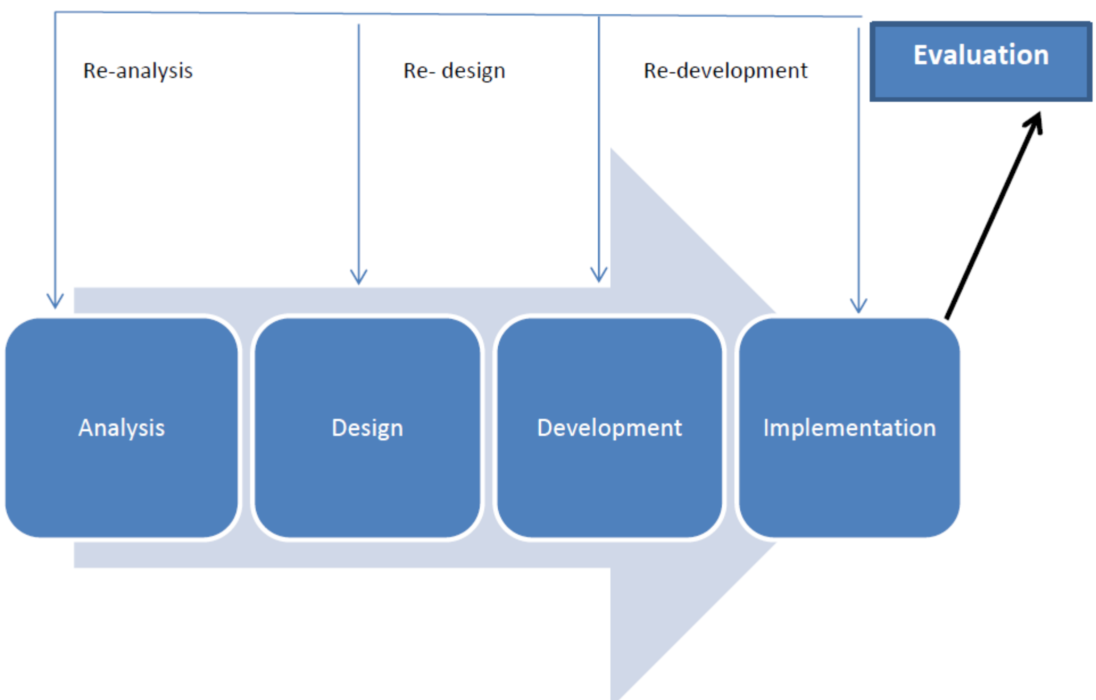


Figure 16. Model of the Instructional System Design (ISD) Process (Source: Moore & Kearsley, 2012, p.98).

Emphasizing on planning is the main approach in the ISD which means that as little as possible should be left for ad hoc decision-making or chance in the implementation stage.

Additionally, each stage in the ISD cycle is a subsystem that produces a product for the next stage or subsystem. All of these subsystems are then linked together into a broader system. For example, in the designing phase, by writing learning objectives, the evaluation plan can then be developed and outlines for assessments and measuring learning outcomes can be established, or course activities are determined after the objectives and evaluation plan have been prepared. Furthermore, in *figure 16* a cycle is shown as well, which means that this is an ongoing process. For instance, although the analysis phase can be conducted at the beginning, at any time when there is a question or problem regarding the validity of the instructional needs or the learning environment, they can be revised. Besides, Moore and Kearsley (2012) claim that there is very little doubt that a direct relationship exists between the ultimate quality of a distance education course and the effort and time put into the ISD (Moore & Kearsley, 2012).

Here, there is a short summary for each stage in the ISD:

Analysis stage: At this stage content must be analyzed, while the aim is to identify what students should learn, the characteristics of learners and the learning environment along with "what the students need to know if they are to be able to perform the desired behavior at desired level" (Moore & Kearsley, 2012, p.98).

Design stage: At this stage the details about what we need for the course needs to be identified. One main item in this stage is articulating learning objectives in very specific terms, which is the required performance of the students as a result of the course and its components. It means that course designers need to put an exhaustive effort towards clarifying and articulating what they believe the students need to learn and how their learning should be demonstrated~~,~~ as a result of their study in each part of the study plan (module, unit, lesson, different part of each lesson). For example, when a college wishes the students to "know Hamlet", this goal should be broken into many specific and detailed objectives, and for each objective, it should be decided what can be achieved by listening, by reading, by practicing, and by reviewing. Then, testing and feedback must be designed for ensuring that the students eventually can be able to perform, either orally or in writing, what is indicated in each objective (Moore & Kearsley, 2012).

Development stage: in this stage the instructional materials, which communicate what is needed for achieving the learning objectives, will be created; such as webpages, study guides, films, books, teleconference outlines, audio tapes. Also, training for teachers and staff may be needed during this stage (Moore & Kearsley, 2012).

Implementation phase: in this stage the students register the instructional materials would be delivered, and then the interactions between students and instructor and among students, based on the materials and teaching plan, can be started and continue. This phase is like performing a play after it is written and rehearsed (Moore & Kearsley, 2012).

Evaluation phase: evaluation activities consist of ongoing testing and grading for each unit and each module~~,~~ as students work through the course and during implementation phase. Occasional investigations into assessing the effectiveness of a particular course procedure or material is also a part of this stage. The main result of this formative evaluation can lead to changes in implementation, while it can lead to changes in the analysis, design, or development procedures as well. At the end of the course a summative evaluation may lead to improvements in future for any phases of the module (Moore & Kearsley, 2012).

ISD is one model of this kind, and there are other models which course designers can use (such as Analyze, Design, Develop, Implement, Evaluate, known as ADDIE model), but the main issue in this regard is to be sure that everything is planned and ready before course delivery stage, while, in the delivery phase, there will be no need for fundamental changes in the course, and by evaluating the course, only minor changes will be needed.

Furthermore, there are two main models for a development team in distance education: *the author-editor model*, and *the course team model*. *The author-editor model* was mainly the usual method for developing a course in earlier forms of distance education, which was based on print media. In this model, a subject matter expert wrote a draft for a study guide, and then~~,~~ an editor polished it up and made it ready for production. The process for developing a course can include of getting reviews from experts and perhaps potential students, designing page layout, proofreading, making corrections, obtaining copyright clearances, and printing the text. This model is favored by many distance education institutes for its simplicity, but a professional instructional designer, along with an investment in time, which the ISD approach requires, are missing in this model. The development process in this model also is fast and cheap (Moore & Kearsley, 2012).

Another model is *the course team model*. In this model, each course is designed and produced by a team of people with various knowledge and-skills. First, a group formed of academics, each specialized in different aspects of a subject, write outlines of what should be taught in their particular specialties. Then, the group engages in negotiations about the allocation of student's time budget for study in that course. A draft of learning objectives will be produced as well as each module's and unit's content into which the course time budget was structured. This group of academics is also responsible for providing content in the study guide, assigning the academics assemble books for reading, recording video and script audio, planning webpages and web-based activities, and designing tests and exercises. All of these will be done with the assistance of a technical specialist in these tasks, which includes text editors, web producers, audio and video producers, graphic designers, instructional designers, and librarians. Moreover, on every team, there can be one or more specialists in the adult distance-learning process. Noticeably, because many tasks should be done by different people, managing this team is a very complex business. Therefore, it is desirable to have a senior academic to head the team and steer the process, and an administrator who is responsible for ensuring that each task is completed on time based on the development schedule. This approach, obviously, is expensive and requires lots of time and efforts from different team members (Moore & Kearsley, 2012).

Therefore, in designing an online course, at least, the following supports are required:

- ✓ Technology infrastructure support,
- ✓ Educational technology support staff,
- ✓ Instructional design staff,
- ✓ Subject experts (Bates, 2000).

In designing a course, students' participations need to be designed too, which means that it should be determined that in to what extent the student's participation is needed and how it should be engineered. There are various ways to have student participation, including setting up discussion groups, quizzes, role play, simulations, or asking students to contribute their own presentations. Using communication technology does not always mean that participation will happen automatically, unless, of course, instructors have been trained to facilitate it and it is well planned. By asking questions from students or asking them to do some assignment and then giving them the feedback, a sense of participation can be created (Moore & Kearsley, 2012).

Another aspect in designing a course is monitoring and evaluation. As in the case of a distance education learner, the instructor and administrating agency are separated from one another, therefore the success of the whole enterprise depends on an effective and active evaluation and monitoring system. The monitoring system provides data that indicates which student is experiencing difficulty and needs help. Also, a good monitoring system indicates the problem experienced by instructors as well, along with delays or breakdowns that can occur in the communication system, while still there is enough time to fix it. This means that in order to have an effective monitoring system, there should be a network of indicators that can collect the necessary data about both the instructor's and learner's performance. The data should be evaluated, which is a process of analyzing and reviewing the feedback data collected by the monitoring system and then making decisions about the operation of distance education system. Moore and Kearsley (2012) believe that an active and effective monitoring and evaluation system is likely to lead to a successful program (which is based on the learner's outcomes), while a poor system almost certainly leads to failure. Therefore, having a monitoring and evaluation subsystem plays a critical part in the quality of any distance education system (Moore & Kearsley, 2012).

Moore and Kearsley (2012), then state that there are three key features for an effective monitoring and evaluation system. The first is the preliminary specification of good learning objectives. There is a central question, that should be asked constantly from the beginning of designing a course until the end of the course delivery, and all evaluations must ultimately address it: "Did each student produce evidence of having learned what was required as specified in the learning objectives, *and if not, why not*?". The second key feature is the construction and the handling of assignments, since assignments provide the necessary indicators in this system and are the source of feedback signals which should alert authorities whenever a problem arises. And finally, the third key feature is a good data gathering and reporting system. This system contains the documents and procedures for recording the assignments (or other course activities) and their evaluations by the instructors. This system should work in the way that only alert the respective authorities regarding any problem, and when everything works properly there is no need for warning signals. It is like a pilot who is looking for red lights and not green lights in the cockpit (Moore & Kearsley, 2012).

Moreover, there are a number of activities that need to be done when designing a course: they should be taken in a sequence in which each step needs to be followed by the next one. These activities are basic ones and each instructor or design team needs to follow the university's standards, policies and procedures for designing the course too, along with working within the university's framework for design. On the other hand, each instructor has his/her own style in designing a course and teaching it (if the designer and instructor are the same one) which, obviously, affects the design as well.

Therefore, the following steps can be seen as the basic steps in designing a course, which can be modified based on the above-stated factors:

1. Analyzing the process of defining what is to be learned (Caplan, 2004).
2. Making a list of general topics to be covered by instruction, as task sheet and information flow chart (Govindasamy, 2001).
3. Specifying the process of how learning will occur (Caplan, 2004).
4. Outlining the course content (Govindasamy, 2001).
5. Identifying the tasks learners should be able to perform (Govindasamy, 2001).
6. Elaborating tasks down into subtasks (Govindasamy, 2001).
7. Identifying tasks to identify conditions, performance, and standard of performance, as instructional objectives (Govindasamy, 2001).
8. Determining the sequences of learning outcomes, activities (Caplan, 2004).

9. Consolidating the components to write objective statements (Govindasamy, 2001).
10. Identifying terminal objectives, intermediate objectives, and enabling objectives (Govindasamy, 2001).
11. Selecting media elements and identifying instructional activities (Govindasamy, 2001).

For this part, we need to consider that media and tools are selected to support the learning goals and objectives. A list for media includes:

- Textbook reading
- Audio clips
- Video clips
- Lecture notes
- Podcasts
- Slideshows
- Worksheets for lecture support.
- Flash-based learning exercises such as games like crossword puzzles and digital flashcards.
- Online quizzes
- Simulations
- Discussions
- Synchronous interaction like chat, whiteboard
- Group activates such as team site building.
- Exams written assignments

- Portfolios
- Wikis
- Blogs
- Journals
- Videoconferencing (Puzziferro & Shelton, 2009).

12. Analyzing instructional objectives to identify types of learning involved, while planning on how to achieve instructional objectives (Govindasamy, 2001).
13. Matching instructional objectives with learning theories, such as Gagne's nine events of learning as an example. While the instructor can use or apply any other learning theories which he/she considers valuable. For example, the following are Gagne's nine events of learning:
    - *Gain attention*
    - *Inform learners of objectives*
    - *Stimulate recall of prior learning*
    - *Present the content*
    - *Provide "learning guidance"*
    - *Elicit performance (practice).*
    - *Provide feedback*
    - *Assess performance*
    - *Enhance retention and transfer to the job* (Govindasamy, 2001).
14. Identifying macro instructional strategy (Govindasamy, 2001).
15. Selecting media elements and rationalize selection (Govindasamy, 2001).
16. Preparing the first draft material by:

- Constructing a concept map
- Developing and validating course evaluation questionnaire
- Creating story boards
- Transforming storyboards into instructional product (Govindasamy, 2001).

17. Identifying or creating textbooks, readings and resources (Caplan, 2004).
18. Developing which is the process of authoring and producing the materials (Caplan, 2004).
19. Ensuring a pedagogical "match" among the course objectives, content, exercises, examinations, and assignments (Caplan, 2004).
20. Identifying materials that require copyright clearance (Caplan, 2004).
21. Preparing the course evaluation instruction (Caplan, 2004), which means that beside having a detailed instruction about grading and evaluation policies for all the course activities, the professor/instructor (in order to assure consistency) needs to have determined the answers to questions about grading before the course begins, especially when students press for details (Dykman & Davis, 2008).
22. Determining the technology being used to deliver the course according to the learning outcomes (Phipps, & Merisotis, 2000).

Also, the activities and information presented in distance-learning materials need to be organized into self-contains units and lessons. Usually, it is done by using the number of hours a student needs to devote to the subject. This time budget needs to be divided by the weeks in one semester, and then, for each week the amount of reading, viewing, writing, listening, practicing, and testing can be designed within this time budget for each week. The time required to complete the assignments and search the Internet or find extra materials for fulfilling the course requirements should be considered as well. The aim of the instructional designer should be to bring integration to the pieces by first discussing the relationship between content in the introduction to each lesson or unit and the summaries, and then, by designing some evaluation activities such a way that the students are able to make their own comparisons and linkages (Moore & Kearsley, 2012).

Designing and developing a web-based course is another aspect of designing a course. There are many ways to create a web-based course, such as web documents (like in HTML format), learning management systems (like Blackboard or Moodle), Multimedia tools, social networking tools (like blogs, wikis, Facebook, MySpace, Ning) (Moore & Kearsley, 2012).

Moreover, web conferences can be a part of course designs and a course can have one or more web conferencing as a part of live interaction between course participants. This can be done via different systems such as Wimba, Centra, and GotoMeeting. The web conferences can provide the benefit of live interaction to the course participants, but scheduling these live conferences is problematic, especially when the program is national or international in scope with students from different time zones. Also, careful planning is essential for these conferences. The important pedagogical principal here is to provide frequent opportunities for students to reflect and process over the topic and get feedback on their understanding. This can be done by preparing some questions to be asked during the conference or ask students to work as partners in small groups on a problem or case/scenario and present their works to each other. Markedly, students need clear guidance and instructions for these collaborative works (Moore & Kearsley, 2012).

Here are a few suggestions made by Hughes (2004) on how to design a better online course:

- ❖ Design the webpages in the way that help students in time management and the development of study schedules.
- ❖ Help students to balance their educational pursuits and other life demands by introducing various resources.
- ❖ Reduce" exam anxiety" by developing online strategies and exercises.
- ❖ Introduce resources to assist students in reading for comprehension.
- ❖ Introduce resources or provide activities to assist students in writing papers.
- ❖ Clarify rules regarding citation and paraphrasing to avoid plagiarism.
- ❖ Assist students in making critical analyses of information from online resources (Hughes, 2004).

Designing and conducting research projects – in various forms as a course's final project or final thesis – are an important part of the teaching-learning process. These research projects can be designed as part of the program's requirements, either as a part of a course or as a complete research project/thesis in any stage in the program. Although designing and delivering a research project in some aspects is different from designing and delivering a course, they share some basic aspects. For instance, when designing a research project, we still need to follow a solid model for design, although the main participants, mainly, are a student and his/her instructor/ supervisor. Therefore, at the end of the design phase, there should be a complete detailed plan regarding how to conduct research, along with a timeframe that the student needs to complete each stage. In this plan, the subject is described, the aims and objectives are set, the main tasks are defined, the research methods and methods for collecting data are clear, the steps for implementing the project are determined, and the interaction time (how often) and the interaction methods (either face to face or via media) between the student and the supervisor are agreed upon. Sometimes, for small projects, the instructor or the research supervisor even prepares a main plan for his/her students to follow. In this way, designing a research project can be in many aspects similar to designing a course. Also, during *the delivery phase* and conducting of the actual research, the student and the supervisor follow the design and make changes when it is necessary. Because of the nature of research in general, there are a number of factors that make the difference between delivering a course and conducting a research project due to the fact that there will be more unpredicted factors that lead to making changes in some parts of the designed plan more than once. Also, it is common that there will be many unknown factors during *the design phase* that will become known during *the delivery phase*, and the gaps for these unknown factors in the plan need to be gradually filled. Therefore, there are many indicators in designing and delivering a course that can be used for research projects as well, which will be discussed in more detail in the next section.

To conclude, as a result of the designing phase, a few materials for students should be ready at the end as self-study materials which based on Melton (2002) includes: *a course guide* (including the course topics and the relationship between them, the aim of the course, a possible study strategy, details about assessment, which equipment is needed, the type of support provided for students), *transcripts for all the study items* (books, note, video, audio, etc.), *the study guide* (contains ongoing guidance that students need throughout the course and the core materials needed to be studied), *course calendar and forms* (for assessment purposes) (Melton, 2002). These items can vary with different names or titles and can be organized in various forms but the point here is that accurate and adequate information is prepared and presented in the course materials for the students. Therefore, in the next part, we will discuss the main items which should be prepared at the end of designing a course in detail.

2.1.3.3.1- The main items created in course design phase. There are a few items which should be prepared during this phase and presented to the students at the end of the phase. Here four (4) main items are discussed in detail:

- A *course syllabus*, including: instructor, tutor, TA (or other members of teaching team) contact information; a course overview; a course schedule; a list of required texts and materials; clearly defined academic and computer skills prerequisites; clear communication about expectations; instructions about activities, assignments and deadlines; faculty contact information and office hours: and student support contact information (Caplan, 2004).
- *The study guide*: It provides a map of the course and the framework for the other materials. A study guide helps the student to learn the materials, and shows how the student is required to study and learn (Moore & Kearsley, 2012). Also, it is perhaps the central element of an online course, the main reference to the structure, content and activities associated with the online course. The organization of online learning activities is the essence of an online course, which enables students to reach certain learning outcomes.

A typical *study guide* has:

- ✓ An introduction to the course and a statement of its objectives and goals (Moore and Kearsley, 2012). It includes a clear description of the instructional aims and learning objectives of the course (Carr-Chellman & Duchastel, 2000).
- ✓ A calendar and schedule shows when specific activities or lessons should be completed (Moore & Kearsley, 2012).
- ✓ A map for clarifying the structure of the course (Moore & Kearsley, 2012).
- ✓ Guidance on how to use the time allotted for study (Moore & Kearsley, 2012).

✓ A substantial presentation of information for each subject, the commentary and discussion from instructor (Moore & Kearsley, 2012).

✓ Explanation of relationship between reading contents and other media (Moore & Kearsley, 2012).

✓ Directions and instructions for exercises and activities, (Moore & Kearsley, 2012) including: assignments, projects, with a clear indication of the quality elements making up the assessment criteria (Carr-Chellman & Duchastel, 2000).

✓ A set of self-testing questions or some issues for the purpose of self-evaluation to be answered or discussed (Moore & Kearsley, 2012).

✓ An explanation regarding the grading scheme and other requirements of the course (Moore & Kearsley, 2012).

✓ Advice and directions on preparing and submitting written or other assignments (Moore & Kearsley, 2012).

✓ An annotated bibliography and references, (Moore & Kearsley, 2012) which includes learning resources: textbook chapters to read, associated articles, supplementary readings, and websites of interest (Carr-Chellman & Duchastel, 2000).

✓ Suggestions about application work or any other activity outside the course (Moore & Kearsley, 2012).

✓ Information about when and how to contact a counselor or instructor (Moore & Kearsley, 2012).

✓ An online course that is more student-centered and activity-based learning environment design (Carr-Chellman & Duchastel, 2000).

✓ The details provided in study guide should be sufficient to enable the students to proceed without substantial further clarification from the instructor or personal interaction (Carr-Chellman & Duchastel, 2000).

➢ *Online grade book*: The purpose of having a grade book is to monitor students' progress regularly and detect any problem immediately, as well as informing students individually about their progress, and providing proper feedback. Other than the instructor and teaching assistant, the administration needs to have access to the grade book and monitor it constantly as well. This monitoring is a very important feature in online teaching for detecting students' problems and helping them at an early stage before it is too late. It is very common for students in an online course to disappear due to personal problems and in many cases, if it is detected and dealt with in a timely manner, it can help the student to continue and complete the course. This monitoring factor can be done automatically by defining and programing an alarm system which when a student does not visit the course page for a certain period of time, does not send his/her assignment, or does not participate in a certain number of forum discussions, the system sends a reminder to both the instructor and the administration to follow up the case and find out the reason (Dykman &Davis, 2008).

➢ Profiles: Because in distance education the interaction between course participants is via a medium, it is very important to have a complete and insightful profile on each participant. These profiles give a sense of familiarity among participants and make communications much easier, friendlier, and less awkward. Students can get a better sense of their professor's expectations and anticipation by reading his/her profile and knowing him/her better, and a professor can modify his/her expectations and anticipations of his/her students by reading their profiles and getting to know them better. For instance, when a professor reads in a student's profile that she is a single mother with a part-time job, he/she will deal with delays in the assignments and forum discussions more cautiously than when a student who is a full-time student without any family obligations does not send his/her assignments on time, and so on (Dykman &Davis, 2008).

The profile for the instructor includes professional interests, background, accomplishments, and educational philosophy. For students' profiles, a professor can determine which information is required. The privacy issue is a very important factor in this matter; therefore, different parties can have access to different sections of students' profiles. Privacy should also be defined based on the universities' policies and frameworks, along with the privacy law and regulations (Dykman &Davis, 2008).

2.1.3.3.2. Technology: an important component of distance education. In choosing the proper media to deliver a course/program (which is an important part of providing teaching-learning environment in distance education), it is important to remember that each medium has its own ability to carry the message in a unique way and in distance education programs; usually, we see a combination of them. Moore and Kearsley (2012) believe that in distance education the issue of access to the Internet is not the most important issue when it comes to technology and media. We can deliver the teaching-learning messages by a simpler technology when a relatively advanced technology is not available. The bigger problem in this regard can be the *quality of the media* produced to be distributed via the technology. Therefore, a common mistake here is to overinvest in a particular technology and then try to load more of the media on that technology than it can optimally carry. For example, in the past, there were many "talking head" TV lectures that were loaded with dense information~~,~~ such as many visual images when it would have been much better to distribute these messages and information via different technology, such as print or text (Moore & Kearsley, 2012).

As an example, Israelite (2004, 2006) points out that “the investment in high-tech web portals and delivery technologies most of the time has not been accompanied by thorough consideration of other instructional components such as the design of effective learning experience”. This perspective is referred to as the *systems point of view* – which was discussed previously (Israelite, 2004, 2006, as cited in Dick, Carey, & Carey, 2009, p. 1).

Anderson and Dron (2010) use an analogy for explaining the relationship between technology and pedagogy in distance education systems. They state that technology and pedagogy are intertwined in a dance: “the technology sets the beat and creates the music, while the pedagogy defines the moves” (Anderson & Dron, 2010, p. 81).

So, in designing and developing a program/course in distance education, a series of conscious choices should be made. These choices are based on various reasons, which can be pedagogical, access, and cost. Therefore, every time a technology or medium is chosen, it should be clear why and based on what purpose this choice has been made. Understanding and knowing about the strengths and weaknesses of each technology or medium is critical in making this choice. In other words, for in order to help the learner to meet her/his educational goal, it is essential to understand the specific attributes of each medium or technology, and having a system view which means that to consider how the chosen medium or technology impact all the components of a distance education system. For example, a new technology such as animated demonstrations of a difficult topic may appear to address a particular problem, but the costs related to it may outweigh the benefits (Shearer, 2003).

It can be said that there is no one best technology or medium, but usually a combination of various media and technologies are needed to meet the learner's objectives. For example, print is still the most dependable means for delivering content and when it is combined with the Internet or other media, it can produce a powerful learner experience (Shearer, 2003).

In discussions about technology as an important component in distance education, we first need to distinguish between technology and media. Moore and Kearsley (2012) explain that "*technology is the physical vehicle that carries the message, and the messages are represented in a medium*" (Moore & Kearsley, 2012, p.7). They then introduce four kinds of media:

1- Text
2- Sounds
3- Images (still and moving)
4- Artifacts

Each of these mediums has its own ability to carry the message in a unique way, and in distance education programs, we usually see a combination of them (Moore & Kearsley, 2012).

There is therefore variability in each medium, depending on the technology that distributes and determines it, while each medium has its own distinguished characteristics. For example, text comes in different forms, and we can mix them to deliver messages, while the messages themselves can have different degrees of concreteness and abstractness. As another example is sounds that are either with or without image affect social presence and intimacy in different ways. Also, we can use each medium in a more or less highly structured way; it means that each medium has a lesser or greater facility for carrying different types and styles of interaction. In distance education, it is very important to choose suitable media to carry the messages (the materials used for teaching-learning) and to know how to use technology for this purpose (Moore & Kearsley, 2012).

Furthermore, Moore and Kearsley (2012) remind us that in a distance education system, we do not need to be an expert in technology, but we do need to know enough to make suggestions and ask intelligent questions. Also, it is important to recognize when something is not working as it should, and above all, we need to know the potential and the limits of these technologies (Moore & Kearsley, 2012). They suggest that we need to have these three questions in mind when we think about media and technology:

- ✓ What are the characteristics of different communication technologies and media and how can be they used in distance education?
- ✓ Which communications' media and technologies would be the best for a student group or a given subject?
- ✓ For the purpose of achieving the maximum effectiveness, how can media and technologies be combined? (Moore & Kearsley, 2012).

In *table 7*, you can find a summary of the strengths and weaknesses of different technologies according to Moore and Kearsley (2012).

Another point which needs to be considered is that not all course materials or needed elements should be available online while some of them, like text books, can be used throughout the course, and other elements – such as video segments or images – can be available online. And in designing an online course we need to keep in mind that the only purpose of having audio or video lectures during the course delivery (which needs to be planned during the design phase) should not be to convey information in the form of content to the students to learn, but as a form of interaction among course participants to enhance students' motivation for learning, students' identification with the course, as well as the instructor's personality from a distance (Carr-Chellman & Duchastel, 2000).

Furthermore, the technology infrastructure for supporting online teaching includes:

- Personal computers;
- Servers;
- The physical network (e.g. Ethernal Ethernet cabling, optical fibre, etc.), which connects all the various pieces of hardware;
- Telecommunication links (Internet service provider, etc.);
- Operating software and routers;
- Communication software such as discussion forum facilities, chat rooms, email, Web management, administration software;
- Browsers;
- Word processing software;
- Graphic packages;
- Web editing software;
- Online teaching platforms like WebCT, Lotus LearningSpace, Virtual U, and Virtual Campus;
- Student administration, which can be compatible with online learning systems;
- Financial system (Heydenrych, 2000).

Table 7.

Strengths and Weaknesses of Different Technologies (Source: Moore & Kearsley, 2012, p. 88).

	Strengths	Weaknesses
Print	Reliable and easy to handle Carries dense information	May seem passive May need longer production time and significant cost
Audio/Video recordings (podcasts)	Stimulating Give vicarious experience	Often low quality or high development time/cost
Computer conferencing	Interactive Immediacy Participatory	Scheduling
Web-based learning	Interactive Asynchronous or synchronous Learner controlled Participatory	Often low quality or high development time/cost Platform costs
Social media	Collaborative Immediacy Participatory	Information Overload Unstructured
Mobile technology	Ubiquitous Immediacy	Bandwidth needed Service costs Limited screen size

2.1.3.4. Course delivery. Moore and Kearsley (2012) state that there are several factors which make the difference between distance teaching and teaching in classroom. The obvious one is that the instructor will not know how students react to what he/she writes or says in live sessions, therefore, having some feedback mechanism is essential in distance teaching. Another difference is that distance teaching is conducted through technology, and evidently instructors need a suitable training regarding this feature. Also, from the students' point of view, an important point here is that, generally, the students are more defensive when they take a course with an unseen instructor, so, it is important for the instructor to be able to sense the students' personalities while there is no direct communication and all communications are filtered through communication technology tools. Therefore, dealing with students' emotions and motivating them are two factors which in distance teaching are more complicated. Moreover, dealing with problems among students or groups (such as conflicts) is another challenge for instructors in distance teaching. Likewise, the instructor must guide the students to be actively involved in the learning process, and in this matter a well-designed course and study guide can help a lot (Moore & Kearsley, 2012).

In this regard, Moore and Kearsley (2012) classified the functions of the instructor into four main categories:

1) *"Content Management:*
   a) Elaborating course content;
   b) Supervising and moderating discussions;
   c) Supervising individual and group projects.
2) *Student progress*
   a) Grading assignments and providing feedback on progress;
   b) Keeping student records;
   c) Helping students manage their study;
   d) Motivating students.
3) *Learner support*
   a) Answering or referring administrative questions;
   b) Answering and referring technical questions;
   c) Answering or referring counseling questions;
   d) Representing students with the administration.
4) *Evaluating course effectiveness "*(Moore & Kearsley, 2012, pp. 127-129).

Content management includes many activities, such as, guiding the discussions, interacting with students and groups as they prepare their projects or presentations, and pointing out certain parts of the course content. Also, the instructor reviews each student's regular assignment, and then evaluates it, while, communicating with each one of the students at every stage of the course the extent to which each student has met the criteria of performance. Moreover, recording students' data resulting from this evaluation process into the system's records is a part of providing the information for the system's effectiveness. In most institutions specialists in a student support service are responsible to answer administrative, technical, or counseling questions. But, the great majority of students first raise their questions with their instructors, and the instructor either resolves the issue or makes the referral. Evaluating course effectiveness would be undertaken on behalf of the institution as a part of its efforts to improve the quality of its program. As other people in the system (such as course designers, technology experts, and administrators) do not have contact with students, the instructors are the ultimate "eyes and ears" of the system. Therefore, when managers of the system need to interpret the data collected from the student monitoring system, the instructor is the most reliable source of information (Moore & Kearsley, 2012).

Moreover, the learners need to know what service they can expect from the institute and what is expected from them. For example, how long it takes to get confirmation for the registration, when the examination grades would be announced, how quickly a response to an email would be received, who the contact for library assistance is, etc. (Hughes, 2004).

After examining these functions of teaching an online course, the main responsibilities of the instructor, which are directly related to the teaching act, would be discussed in more detail as follows:

2.1.3.4.1. Teaching online. For distance learning, students need the skills to analyze and synthesize personal positions, be able to defend them, and to criticize others with good arguments. Clearly, these skills are different from what students already know about going online and interacting with other people socially. Therefore, it is a challenge for instructors to get students to engage in discussion relevant to the course content and of pedagogical value. Hence, the instructors need to develop facilitation skills as well; such as, asking suitable and right questions, controlling the number and length of messages received from students, acknowledging every message, creating a forum, taking advantage of different tools available in online learning systems, being a model of good manners and insisting on good manners online, and distinguishing between public comments for the entire class and feedback for specific individuals (Moore & Kearsley, 2012).

The social aspects of teaching online is an important aspect too (which will be discussed in more detail in the interaction part), and has been the subject of many studies. Brown (2001) describes three stages for building a community in an online class: *conferment, comfort, and camaraderie* (Brown, 2001, as cited in Moore & Kearsley, 2012, p.144). Curtis and Lawson (2001) by comparing face-to-face collaboration with online collaboration believe that they are similar in many ways, although for online collaboration more planning is required, and the nature of the collaboration can be affected by familiarity with the online system (Curtis & Lawson, 2001, as cited in Moore & Kearsley, 2012, p.144). And, Hughes, Wickersham, Ryan-Jones, and Smith (2002) discuss that establishing trust in technology, the instructor, and other participants are the obstacles to successful online collaboration (Hughes, Wickersham, Ryan-Jones, & Smith, 2002, as cited in Moore & Kearsley, 2012, p.144).

Also, having Web conferencing in online courses is a part of teaching online, while the other characteristics of teaching online (as mentioned above) would be applied in this aspect of teaching an online course too. In this regard, the strength and limitations of the Web conferencing systems -available for the instructor- should be acknowledged, and it is important to prepare the materials (texts and visuals) being used in Web conferencing, upload them, and work with them during the conference. Additionally, it is critical to know how to calmly and professionally respond to technical problems and deal with them, as it is more likely technical problems can happen during Web conferencing. Training and practicing are two key aspects of teaching effectively via Web conferencing, and there are many guidelines in this regard available for instructors and students alike (Moore & Kearsley, 2012).

2.1.3.4.2. Handling assignments. One of the key components, which links the instructor to the student, is the assignment. Also, the assignment links the designer to the instructor and even the student to other students. The individual student's progress is measured by the assignment, and the assignment is the key to program evaluation. A successful course is a course that is designed with proper assignments and a working system for handling them. Therefore, supervising and evaluating the assignment are important roles for instructors in distance courses (Moore & Kearsley, 2012).

The assignments can be defined as the products submitted by students as evidence of learning, and can be in the form of an essay, a report of observations, a mathematical calculation, an experiment, or a social event. Also, there are different formats for assignments, such as a multiple-choice test, a solution to a problem, an analysis of a study case, a work of art, a piece of music, or a poem. It is very important to have a crystal clear awareness of the learning which the students are expected to demonstrate via assignments. Likewise, an interesting and challenging assignment can add so much to the instructional value of the course. The factor of "time limitation" in completing an assignment should be considered as well. It means that in the designing stage for assigning the assignments, the time budget of the course or course units must be considered (Moore & Kearsley, 2012, p.117).

Likewise, research shows that if the distance learners have frequent assignments, they are more likely to continue and complete a course. And, there is a close relationship between the length of delay between assignment submission and its return and students' tendency to drop out or continue a course (Moore & Kearsley, 2012).

On the other hand, focusing on every individual student is an important characteristic of effective teaching. Therefore, students' expectations regarding assignments' grading and feedback can be summarized as these points:

- ✓ Grading with objectivity and fairness;
- ✓ Treating student's work with respect;
- ✓ Giving an explanation and justification of the awarded grade;
- ✓ Stating a clear indication about how the student can improve both in general and in term of specific responses to questions;
- ✓ Encouraging and assuring students about their ability and progress;
- ✓ Stating constructive criticism and advice;
- ✓ Giving an opportunity to respond if the student desires;
- ✓ Responding in a timely manner (i.e., responding before the due date for the next assignment) (Moore & Kearsley, 2012).

The aim of student task in form of assignment or project is that students be able to master the objective of the course by constituting the learning experience and engaging them, either individually or collaboratively. Also, there are two dimensions regarding assignments and projects. One dimension is the authenticity in the assigned tasks, which needs to optimize the students' involvement and engagement with the subject matter. This dimension is necessary to sustain the students' interest and activity, due to the fact that they face the disadvantage of not having the same sustaining social interaction as do the traditional instructional settings. Another dimension is about learning how to focus on searching for appropriate information relevant to the learning goals. This dimension is essential, as there is a wide range of possibilities offered either by the course materials, or through the rich information and learning resources available on the Internet (Carr-Chellman & Duchastel, 2000).

2.1.3.4.3. Feedback. Garrison points out that in distance education, the educators must be aware of their *ideals*- which shape practice and have a significant impact on learners. We should bear in mind that self-instructional materials should be based on confirmatory feedback, as, this feedback intended to guide and direct learners towards a prescribed and selected goal. Moreover, for achieving higher-level cognitive goals, we need to provide the opportunities to negotiate learning objectives, and encourage students to analyze course content critically for the purpose of constructing meaning. And then, we need to encourage and guide students to validate knowledge through action and discourse (Garrison, 1993). Also, Roblyer and Wiencke (2003) state that giving consistent, timely and useful feedbacks to students are evidences of high instructor engagement (Roblyer & Wiencke, 2003).

Likewise, Hyland (2001) gives a summary of the studies regarding feedback in distance education. She states that marking should be a way of facilitating learning, which can be giving encouragement tempered with explanation and honesty for grades offered. Also, tutors/ instructors should adopt a sympathetic and supportive approach, while criticisms should be constructive. On the other hand, students should have opportunities to respond to comments, and in this way a dialogue should be set up. Students prefer feedback and they want detailed comments on both good and problematic works (Hyland, 2001).

Therefore, giving timely feedback would be an important time workload issue for the instructor (Carr-Chellman & Duchastel, 2000), and providing timely feedback to the students is one crucial element related to assignments. The feedback can be provided in various forms, from correcting misconceptions, providing overall guidance and structure to the activities, or encouraging progress. Hence, feedback to students' assignments and questions should be on time (appropriate timing based on the rules and policies to which the instructor and students agreed), accurate, and constructive (Phipps & Merisotis, 2000). To provide a clear indication of what is accepted and the standards of quality work that the instructor expects, it is useful to make prior students' work available on the course web page (Carr-Chellman & Duchastel, 2000).

2.1.3.4.4. Test security. There is a basic problem in teaching online regarding online assessment, which is the fact that one does not know who is actually doing the work in an online course and taking the exams or tests online (Dykman & Davis, 2008). Although there are different online testing tools or plagiarism detective tools, still, they do not solve the dilemma of ensuring test security; for example, still, there is no way to authenticate the learner who does the test (Moore & Kearsley, 2012). Therefore, we need to find various methods and tools to maintain the integrity of the tests.

One way to overcome this problem is by knowing students personally through meeting them at the first orientation session and checking their photo IDs (Dykman & Davis, 2008).

Also, some universities or programs take the test or exams at a learning center (or any other places specified for the exams and tests) under the supervision of the instructor or administration staff. Therefore, in designing and delivering a distance course, these limitations need to be considered (Moore & Kearsley, 2012). Then, due to this fact, online coursework is now less examination-oriented and tends to de-emphasize examination as the main form of student assessment. But the main solution is to trust in the students' academic honesty (Dykman & Davis, 2008).

2.1.3.4.5 Interaction. As mentioned previously, interaction is an important aspect of distance learning, and there are many studies conducted about various dimensions of interaction in distance learning. One of the comprehensive studies has been done by Roblyer and Wiencke (2003) and they introduce a rubric for assessing interactive qualities in distance courses. They designed this rubric based on various researches done regarding interaction. They first claim that there are consistent indications yielded by research that higher achievement and student satisfaction are associated with increased interaction in distance courses. Then, they indicate the characteristics which define interaction in distance education (Roblyer & Wiencke, 2003).

For understanding interactive processes, they identify three concepts. Identification of types of interaction, which is discussed by Moore (1989), is the first concept. Moore (1989) describes the types of interaction based on the members involved in each exchange: learner-content, learner-instructor, and learner-learner (Moore, 1989, as cited in Roblyer & Wiencke, 2003). The fourth kind of interaction was added by Hillman, Willis, and Gunawardena (1994) to Moore's work as the students' ability to successfully use the distance technologies (Hillman, Willis, & Gunawardena, 1994, as cited in Roblyer & Wiencke, 2003).

The second perspective is the characterization of interaction as message transmission. This concept is derived from a communications model offered by Shannon and Weaver (1949); in this model the elements involved in a completed message are identified as: a message source, a means of signal transmission, a destination or receiver, and extraneous 'noise" or interference with message communication. These interactions are referred to as “completed message loops”. These completed messages can offer a measurable component of interaction (Shannon & Weaver, 1949, as cited in Roblyer & Wiencke, 2003).

The third concept is interaction as social and psychological connections. In the literature, researchers emphasize the complex and important interplay between interaction based on social connections and interaction for instructional purposes and perceptions of connections among participants. In the distance teaching-learning environment (like in traditional classrooms) instructors and students exchange messages from perceptions of each other, of the course, and the subject matter content. Evidently, these perceptions and exchanges would affect the nature of messages and consequently the learning processes that take place. Roblyer and Wiencke (2003) believe that when there is friendly and open (rather than circumscribed and formal) exchange among an instructor and students in a distance teaching-learning environment, it is likely to be more productive from a learning standpoint (Roblyer & Wiencke, 2003).

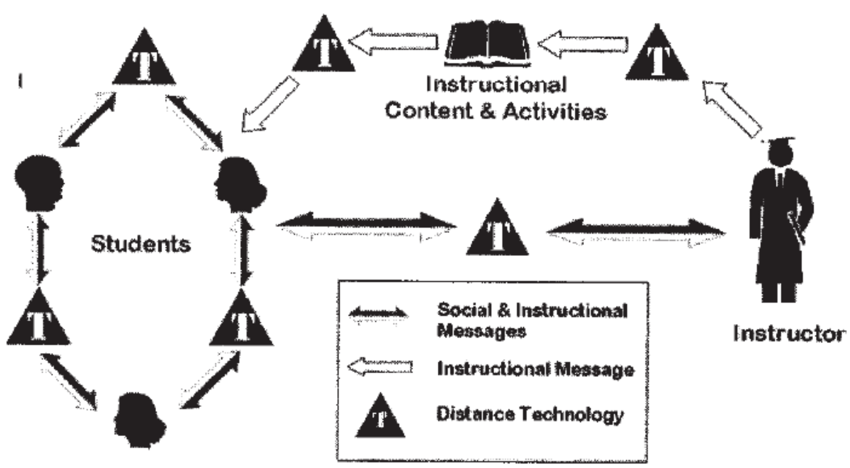


Figure 17. Model of an Instructor- Directed Interactive Distance Learning Environment (Source: Roblyer & Wiencke, 2003, p. 82).

Figure 17 shows a model of an instructor- directed interactive distance learning environment which is adopted from Roblyer and Wiencke (2003), and it shows these three concepts and their interactions with each other, and *Table 8* shows the whole rubric designed by them (Roblyer & Wiencke, 2003).

Table 8.

Rubric for Assessing Interactive Qualities in Distance Courses (Source: Roblyer & Wiencke, 2003, pp. 91-94).

Scale (see points at end of table)	**Element #1: Social/Rapport-Building Designs for Interaction**	**Element #2: Instructional Designs for Interaction**	**Element #3: Interactivity of Technology Resources**	**Element #4: Evidence of Learner Engagement**	**Element #5: Evidence of Instructor Engagement**
Low interactive qualities (1 point each)	The instructor does not encourage students to get to know one another on a personal basis. Activities do not require social interaction or are limited to brief introductions at the beginning of the course.	Instructional activities do not require two-way interaction between instructor and students; they call for one-way delivery of information (e.g., instructor lectures, text delivery) and student products based on the information.	Fax, Web pages, or other technology resource allows one-way delivery of information (text and/or graphics)	By end of course, most students (50%–75%) are replying to messages from the instructor but only when required; messages are sometimes unresponsive to topics and tend to be either brief or wordy and rambling	Instructor responds only randomly to student queries; responses usually take more than 48 hours; feedback is brief and provides little analysis of student work or suggestions for improvement.
Minimum interactive qualities (2 points each)	In addition to brief introductions, the instructor requires one other exchange of personal information among students (e.g., written bio of personal background and experiences).	Instructional activities require students to communicate with the instructor on an individual basis only (e.g., asking/responding to instructor questions)	E-mail, Listserv, conference/bulletin board, or other technology resource allows two-way, asynchronous exchanges of information (text and graphics).	By end of course, most students (50%–75%) are replying to messages from the instructor and other students, both when required and on a voluntary basis; replies are usually responsive to topics but often are either brief or wordy and rambling.	Instructor responds to most student queries; responses usually are within 48 hours; feedback sometimes offers some analysis of student work and suggestions for improvement.
Moderate interactive qualities (3 points each)	In addition to providing for exchanges of personal information among students, the instructor provides at least one other in-class activity designed to increase communication and	In addition to requiring students to communicate with the instructor, instructional activities require students to communicate with one another (e.g., discussions in pairs or small groups).	In addition to technologies used for two-way asynchronous exchanges of information, chat room or other technology allows synchronous exchanges of	By end of course, all or nearly all students (90%–100%) are replying to messages from the instructor and other students, both when required and voluntarily; replies are always responsive to topics	Instructor responds to all student queries; responses usually are within 48 hours; feedback usually offers some analysis of student work and suggestions for improvement.

	social rapport among students		primarily written information.	but sometimes are either brief or wordy and rambling.	
Above-average interactive qualities (4 points each)	In addition to providing for exchanges of personal information among students and encouraging communication and social interaction, the instructor also interacts with students on a social/personal basis.	In addition to requiring students to communicate with the instructor, instructional activities require students to develop products by working together cooperatively (e.g., in pairs or small groups) and sharing feedback.	In addition to technologies used for two-way synchronous and asynchronous exchanges of written information, additional technologies (e.g., teleconferencing) allow one-way visual and two-way voice communications between instructor and students.	By end of course, most students (50%–75%) are both replying to and initiating messages when required and voluntarily; messages are detailed and responsive to topics and usually reflect an effort to communicate well.	Instructor responds to all student queries; responses usually are prompt (i.e., within 24 hours); feedback always offers detailed analysis of student work and suggestions for improvement.
High level of interactive qualities (5 points each)	In addition to providing for exchanges of information and encouraging student–student and instructor–student interaction, the instructor provides ongoing course structures designed to promote social rapport among students and instructor.	In addition to requiring students to communicate with the instructor, instructional activities require students to develop products by working together cooperatively (e.g., in pairs or small groups) and share results and feedback with other groups in the class.	In addition to technologies to allow two-way exchanges of text information, visual technologies such as two-way video or videoconferencing technologies allow synchronous voice and visual communications between instructor and students and among students.	By end of course, all or nearly all students (90%–100%) are both replying to and initiating messages, both when required and voluntarily; messages are detailed, responsive to topics, and are well-developed communications.	Instructor responds to all student queries; responses are always prompt (i.e., within 24 hours); feedback always offers detailed analysis of student work and suggestions for improvement, along with additional hints and information to supplement learning.
Scale (see points at end of table)	**Element #1: Social/Rapport-Building Designs for Interaction**	**Element #2: Instructional Designs for Interaction**	**Element #3: Interactivity of Technology Resources**	**Element #4: Evidence of Learner Engagement**	**Element #5: Evidence of Instructor Engagement**
Total each Total overall	___ points ___ points	___ points	___ points	___ points	___ points

Note: Rubric Directions: The rubric shown above has five separate elements that contribute to a course's level of interaction and interactivity. For each of these five elements, circle a description below it that applies best to your course. After reviewing all elements and circling the appropriate level, add up the points to determine the course's level of interactive qualities (e.g., low, moderate, or high).
Low interactive qualities 1–9 points
Moderate interactive qualities 10–17 points
High interactive qualities 18–25 points

An important point regarding this rubric is that the designers came up with calculating interactive quality by adding the points for each cell equally without any weight or priority; however, some features in interaction for teaching-learning environment are more important or effective than the others. Similarly, it can be said that this issue is true in a classroom too. For example, communicating with students and social interaction in a classroom is not as important as the way the instructor presents the course materials or gives feedback to the students. Consequently, this can be true for distance education as well, as the instructional designs for interaction have more effect on the teaching-learning environment than social building design for interaction. Therefore, when we are designing the interactions in a distance course/ program, we need to consider this factor in various features of interaction and give the priority or weight to the features that have more effect on teaching and learning.

2.1.4. Services. The model in *figure 14* shows that there are different service units/divisions that need to be provided for an academic environment in different levels to assist them in conducting the essential tasks. The main services components in a university structure are: Human resource management (for staffing, supervising, and training the staff in various levels and areas), Financial management (for managing the financial components, incomes, expenses, assets, etc. in different levels and areas), ICT management (which is a very important component in online universities for staffing, training, building and maintaining the ICT infrastructure, etc.), Resource management (for managing different resources like library, buildings, etc.), Administration (for providing a wide range of administrational tasks, such as admission and graduation), and Student Support (for providing various services, such as tutoring, financial aids, counseling, etc.). These components are shown in the left side of the model in *figure 14*.

2.1.4.1. Student support. Generally, the universities offer different services to help students with their problems. These services include: *financial aid offices, walk-in counseling centers, career development and placement, remedial tutoring, and various facilities intended to boost social interaction and peer support*. Usually, this area is less organized in distance education. Since some studies suggest that there is a direct relationship between the student support system and students' dropping out of a program and failure, this area deserves more attention. At any stage of the distance-learning experience, the need for counseling and guidance can occur. It is important to note that many problems would be averted if guidance is available for helping students to make wise choices among various options in the early stages in a program or course. For example, receiving admission counseling to match the student's knowledge and skills to the expectations of the course, or having an orientation for all the students entering the program can reduce the need for individual counseling later. Most of the online universities provide Web-based support sites with tips for online study, some form of general orientation to distance learning, technical help, information on how to contact counseling and advising services, and some programs which help students to evaluate their own readiness for distance learning. The main advantage of having these services online is that they would be available all the time even when the staffs are not available. Also in online universities there is a need for creating a sense of belonging to the institute due to lack of face-to-face contacts and being physically present in various students' activities; obviously, on-campus students develop this sense by their physical presence in sports, clubs, and social activities. Therefore, by having a creative student service, this sense of belonging would be created (Moore & Kearsley, 2012).

For reducing the feeling of isolation among students in distance education, some institutions give them the means for social contacts and many institutes encourage students to use selected social technology (Facebook, Twitter, Skype, etc.) as a mean for socializing (Moore & Kearsley, 2012). For instance, Curry (2003) reports that the University of Arizona developed a solution for overcoming the students' connection with the university in its online Master of Arts program in Library Science. The University of Arizona provides a "virtual happy hour" to discuss curricular issues, internship opportunities, etc. Also, advisors set schedule appointments with students or virtual office hours, while changes in the program's procedures and policies are announced electronically on a general school distribution list and students themselves are responsible for the information posted in this manner (Curry, 2003).

On the other hand, the student service should be proactive rather than reactive. It means that many students can have family, health, or job-related problems which can threaten their academic progress. In the case of problems, most of the time, it can be very late to help a student when he/she comes forward and asks for help. Therefore, by carefully monitoring the assignment productivity or an assignment which was not produced on time, the student service staff gets an alert to a potential problem which can be detected by a simple email message offering help. If an institute fails to be proactive in solving students' problems and taking such steps, the non-academic problems get the whole student's attention and the result would be dropping out (Moore & Kearsley, 2012).

Sometimes students, in dealing with the routine administrative aspects of being a student, need assistance; such as, registering, obtaining materials, receiving grades, paying fees, or getting tuition benefits. For online universities these kinds of assistance can be done via email and telephone, instead of visiting the relevant offices. Often, students have difficulty reaching or even identifying the right person to contact and it can be frustrating. Ideally, in distance education programs, students have a single person to contact for all administrative problems. Additionally, when students first register or at the beginning of a course, they need to receive a precise description of all the administrative procedures and requirements which would be available in a student handbook or Web page (Moore & Kearsley, 2012).

Curry (2003) quotes from a study done by Trent (1993) which indicates what students identified as important functions of advising from a list as follows: "

✓ Assistance in completing a program of study.

✓ Analyzing past academic experiences when planning a program of study.

✓ Identifying experiential learning and testing options when planning a program of study.

✓ Signing and sending a program of study form to an administrative office for the initial step in a graduation audit" (Trent, 1993, as cited in Curry, 2003, p.185).

In addition to these items in the list, the students also added three more items as important functions for advising:

✓ "Provide accurate information.

✓ Explain assessment options.

✓ Be available when needed" (Curry, 2003, p.186).

2.1.4.2. Resource management. Generally, resource management is responsible for locating and maintaining libraries and study centers (Moore & Kearsley, 2012). In this regard, the Association of College and Research Libraries (ACRL), which is a division of the American Library Association, has a guideline for libraries in distance education institutions (See: http://www.ala.org/acrl/standards/). In this guideline, ACRL clarifies that all students, faculty members, staff members, administrators, or any other members of a higher education institution are entitled to the library services and resources. Therefore, academic librarians must meet the research and information needs of all these constituents (ACRL website).

In this document, it is clarified that the library operation should be directly associated with the main institution. Also, the library can be entirely online, or it can be the library of an existing physical institution, which has been contracted for services or materials for the online institution, and library services includes the services necessary in support of programs and courses offered by the institution (ACRL website).

Furthermore, the distance learning librarian is specialized in distance learning library services and directly responsible for supervision and administration of library services. The librarian, also, is the direct agent and principal for implementation of library services and resources in support of distance learning programs. The distance learning librarian manages services and access to resources for the distance learning community. Additionally, there can be other librarians active in providing services for distance programs as “Embedded Librarian”, who actively participates in the delivery of an online course with the course instructor, and the level of involvement varies from a viewing and commenting role to a full partnership, which depends on the course and the instructor (ACRL website).

Additionally, there are other requirements for a library in an online university:

- Availability for all users: the primarily responsibility for the library is to make sure that its personnel, resources, and services are available for all the users- regardless of their location. Therefore, the library needs to identify, coordinate, develop, implement, and assess these services and resources. Moreover, the library’s program in distance education must be designed to meet the unique needs of the distance learning community along with the standard information and skills development needs in general. The desired and requirements outcomes of academic programs would guide the library’s responses to defined needs. For meeting these needs, innovative approaches to the design and evaluation of special systems or procedures are encouraged.
- Academic excellence: for the attainment of superior academic skills, access to appropriate library resources and services is essential. Hence, members of the distance

education community must be provided appropriate and effective library resources and services, which may differ from but must be equivalent to those provided in conventional universities.

- Instruction: the library must provide information literacy instruction programs for all users in the distance learning community.
- Technical Infrastructure: the service, management, and technical linkages must be provided between the library and other complementary resources bases; such as instructional media, computing facilities, telecommunication centers, and support services for people with disabilities.
- Strategic planning: the library should maintain a strategic plan and vision and its mission and goals should be consistent and compatible with those developed by the institution. This strategic planning needs to be an iterative process which includes updating, evaluation, and refinement, and serve as a framework for all its activities.
- Needs and outcomes assessments: needs assessment would measure how adequately the library services are being provided within the context of current ongoing teaching-learning activities, and outcomes assessments would address the accountability of institutions to determine whether library services have effectively met the needs of the distance education community over time and whether students have learned effectively. Outcomes assessment, as an active mechanism for improving the long-term results of current library practices, focuses on the achievement of outcomes- which have been identified as desirable in the goals and objectives of library services and identifies performance measures. These planning and assessment activities include: surveys (e.g., LibQual), focus groups, usability studies, discussion forums and other formal and

informal feedback mechanisms, instructional planning, and collection reviews. The greater dependence of libraries on technology, their increasing use of online services, new developments in the ways in which scholarly information, their growing responsibility to provide information literacy skills, their increasing reliance on consortial services should be taken into consideration (ACRL website).

2.1.4.3. ICT management. Intellectual Technology (IT) Management or Intellectual and Communication Technology (ICT) Management is responsible for obtaining and maintaining technology, especially servers and other computer hardware (Moore &and Kearsley, 2012).

ICT in an online university has two main components: *infrastructure* and *applications*. These components serve administration, communication, and academic needs by providing hardware, software and networks for the university. Investing in physical infrastructure is a huge investment in universities and it needs constant maintaining as well as upgrading. Although physical infrastructure (which includes computers, servers, physical networks, routers, operating software, etc.) is an important element, human support is required in order to make the physical infrastructure work. This human resource for ICT management includes two groups:

1. Technical support staff for ensuring that the equipment and networks are properly installed, operated, maintained and updated.
2. Staff who create and apply educational materials and programs needed for teaching, do instructional design, plan and implement faculty development, evaluation and other supports needed for technology in teaching (Bates, 1999).

ICT management in an online university is at the heart of the system and providing reliable services for other components is a vital function. As a summary, it can be said that ICT management is responsible for:

- Operating and managing the university's technology infrastructure, including the university's website for courses, library, administration, information, etc.
- Maintaining and updating the website for 24/7 operation (website should be available and operate all the time)
- Providing and maintaining essential hardware, software, and networks for all participants (regarding both academic environment and service providers)
- Giving technical consultation and training for designing and delivering programs/courses and for communication service providers (Hughes, 2004).

Moreover, regarding the administrative web page, these points can help us to maintain the page:

- Testing the technology and revising it as necessary.
- Observing the learners using the Web page and asking for feedback (for example, it can be done by making a fake ID and do all the administration procedures with it to test the system).
- Monitoring the use of the Web page regularly.
- Always having helpdesk attendants available to troubleshoot.
- Conducting a learner satisfaction survey can be a good tool (Hughes, 2004).

2.1.4.4 Administration. All the major activities and events that support any *formal educational process* are done by the administration. Obviously, the complexity and extent of administrative activities may vary according to the type of distance education system but, in general, they include:

- ✓ Deciding which courses should be offered.
- ✓ Administrating the process of designing and implementing the courses.

- ✓ Informing potential students about the available courses and how to join them.
- ✓ Registering related applications and administrating admission procedures.
- ✓ Setting up and running counseling and instructional services to students.
- ✓ Appointing, supervising, and training administrative staff.
- ✓ Administrating student evaluation procedures, certificates, awarding grades, diplomas, and degrees.
- ✓ Continuously monitoring the quality, efficiency and effectiveness of the program (Moore & Kearsley, 2012).

2.1.4.5. Human resource management. The human resource management division is responsible for *appointing, training and supervising* staff including:

- Subject experts who usually are the academics of the institution.
- Instructional designers.
- Specialists in learner support.
- Instructors for teaching the courses.
- Technicians and technology experts for setting up and maintaining the communication systems and other essential systems for the distance education institution.
- Administrators, such as course managers, program directors, and site coordinators.
- Clerks for processing enrollments, materials, and grades.
- Managers, such as presidents, deans, and other executives (Moore & Kearsley, 2012).

Also, the HRM division should follow various guidelines for undertaking these responsibilities (appointing, training, and supervising staff) based on the criteria assigned by various policy makers. Although these criteria are different in each university, they share some common aspects. For example, some of the criteria for hiring an instructor can be: instructor's years of experience, instructor in- service training history, instructor professional knowledge and skill, instructor's content knowledge, instructor's knowledge (education) about pedagogical and didactic strategies, instructor's working conditions: salary, working time, average class size, training/certification requirements, and incentives, formal qualification of instructor (Scheerens, et al., 2011).

2.1.4.6. Financial management. Collecting fees, administrating scholarships, and keeping accounts are the responsibilities of the financial management division (Moore & Kearsley, 2012). The main thing about financial management is keeping balance between incomes and expenses, and allocating resources by prioritizing the needs of various components of the university, which is the matter of cost-effectiveness. Moore and Kearsley (2012) explain the importance of budgeting in distance education institutions. They first categorize the financial needs in a university as: "

- Developing new courses.
- Buying new technology.
- Hiring academic staff.
- Paying for student support services.
- Running learning centers.
- Running the administration services.
- Marketing the programs "(Moore & Kearsley, 2012).

Then they state that the main question here is to ask what relative proportion of resources and funds should be allocated to each category. This means that a careful analysis of the needs must be done first, which depends on having reliable evaluation data on all aspects of the organization's distance education efforts (Moore & Kearsley, 2012).

2.2- The Process Model for Quality Management in an Online University

In the previous section, *Discussion 2.1*, a model for the university's main components was introduced, and *figure 14* and *figure 15* illustrates these essential components, which can be organized as a formal organizational structure. These components were then described and examined from a quality management perspective in detail. From a quality management point of view, the main concern is to explore how these main components in a university work together as a whole system (which consists of various interrelated systems and processes) in a harmonious way to provide a functioning and dynamic academic environment for students. Therefore, in this section, the main objective of this study, which is introducing a system for managing quality in an online university from a new perspective, will be examined and discussed. This quality management system is based on a designed measurement system in the form of an interacting table for selected indicators defined for the real tasks for the university's various components.

To design and complete a quality management system in this study, after demonstrating the model of the main framework for the university's components, three (3) steps were taken to design the measurement system and prepare a measurement table associated with it:

- ✓ **First**, *a chain process model* was designed and examined in detail.
- ✓ **Second**, a survey was designed and conducted to ask the participants - who are involved in online universities - to evaluate the designed *chain process model* and its measurement system.

- ✓ **Third**, based on the participants' opinions expressed in the questionnaire and further considerations, the designed quality management system was modified, and new indicators, along with new categories for the indicators, were introduced. Then, based on these new indicators and their categories, a new measurement table was completed and finalized. It should be noted that in the initiate *chain process model,* its defined phases were the same, while some of the tasks were modified and the main changes at the third step occurred in the indicator clustering, which consequently made a fundamental change in the defined indicators and its measurement table.

In the next part of this section, these three (3) steps will be described and discussed in detail.

2.2.1. Designing the chain process model. A few steps were taken in designing the initiate quality management system. First, a model that defines the main process for providing an academic environment in a university was designed. Then, the main tasks and the indicators for these tasks were defined. And as the last step, a measurement system for these indicators was prepared.

Therefore, as the first step, a *chain process model* - which consists of various phases for providing an academic environment in an online university – was designed (See *figure 18*). The main purpose for designing this model was to find a way to illustrate these complex systems and processes in a simple way, and then define suitable criteria and measurements for managing quality in an online university.

The main aspect for designing this *chain process model* is the idea that this model can help us to understand what is actually happening in an online university during the process of providing an academic environment. Then, the main indicators for quality management need to be defined based on these actual processes and procedures. It is vital to relate the concept of quality in education - in general- to the actual reality of what is happening within a system of creating an academic environment.

In this model, shown in *figure 18*, we follow two separate chain processes based on two different perspectives: one from university management's point of view (shown by a ***black*** line), and another one from the students' viewpoint (shown by a ***red*** line). *Nine (9) phases* in total for the university's management chain process (at different levels and for various components) are defined. As well, in each phase, different processes and tasks to be performed by personnel from the different units and divisions are described, and then the quality indicators based on these actual processes and tasks are assigned. As *figure 18* shows, from a management perspective, that the first phase is "*Collecting data from various stakeholders"* and the last one is *"Evaluating the program"*.

Furthermore, the red line shows the main chain process for various phases from the students' perspective, which consists of six (6) main phases. The first phase starts when students are "*sending their requests and applications*" to apply for a program in an online university, and the last phase is "*graduation* "from the program. As well, there is a loop between phase 6 and phase 8 in the *student's chain process*, which means that when a student starts a program, he/she needs to register for a few semesters, and in each semester he/she should register for more than one course, and every student in the system should go through these 3 phases several times until the end of his/her studies and graduation. In other words, every student needs to register for various courses (here *course* is a general term, and it includes all academic activities such as seminars, projects, practicums, internships, etc.) and pass them over the required time period (which depends on defined credits/hours, semester length, etc. in the institution). Obviously, this process of registering for one or a few courses each semester would be repeated several times until all the requirements of the program are met, and the student graduates.

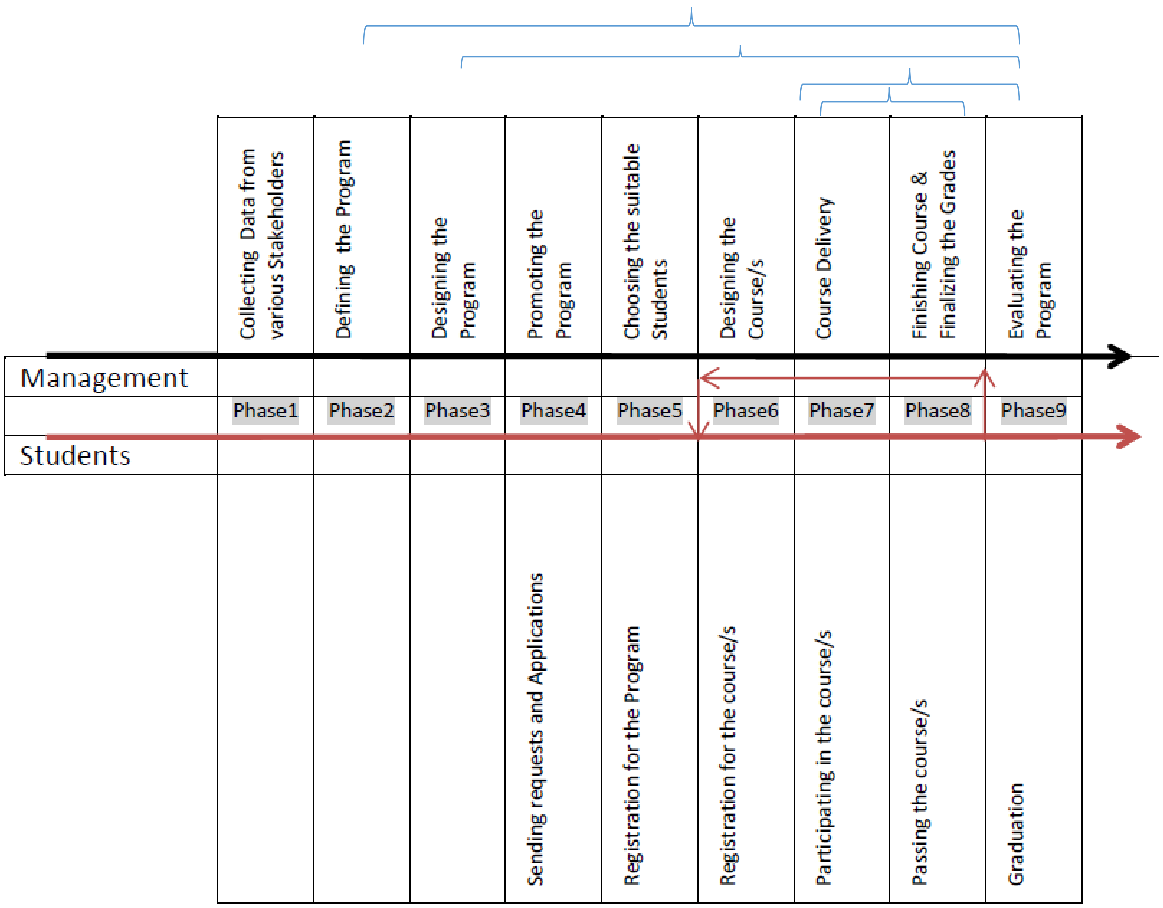


Figure 18. A chain process model in online universities.

The model, presented in *figure 18*, is based on defining and designing a new program in a university for the first time; the program would then be delivered over and over again. Therefore, after a program is designed and delivered for the first time, we need to use a *modified chain process model*. In this regard, *figure 19* shows a modified model for the main chain process model introduced in *figure 18*, which is slightly different in some phases. In this modified model, the last phase, *"Evaluating the program"* is directly related to the first phase "*Collecting data from various stakeholders*" (shown by a ***black*** arrow in the model in *figure 19*). This connection means that after the program is designed, delivered and evaluated, we will have new information based on actual facts and evidence that can be used to create a more qualified program, along with the new information and data from various stakeholders, which can indicate changes and new needs. Therefore, by putting actual information about the program's outcomes, outputs and impacts beside new collected information and data from various stakeholders, we need to redefine and redesign the program by making necessary changes.

Hence, *phase 2* in this modified model is "*redefining the program*" instead of "*defining the program*", in phase 3 instead of "*designing the program*" we have "*redesigning the program*", and in phase 6 instead of "*designing the course/s*", we have "*redesigning the course/s or designing new course/s*". Noticeably, all the changes in these phases would be based on new information and factors collected in the "*evaluating the program"* phase (*phase 9*), along with new information from various stakeholders. In fact, in this way, we would have a loop of planning, designing, delivering, and evaluating, which is a systematic way for managing quality.

In this modified model, the phases for students are the same, as all the changes happen within the university (*Figure 19*).

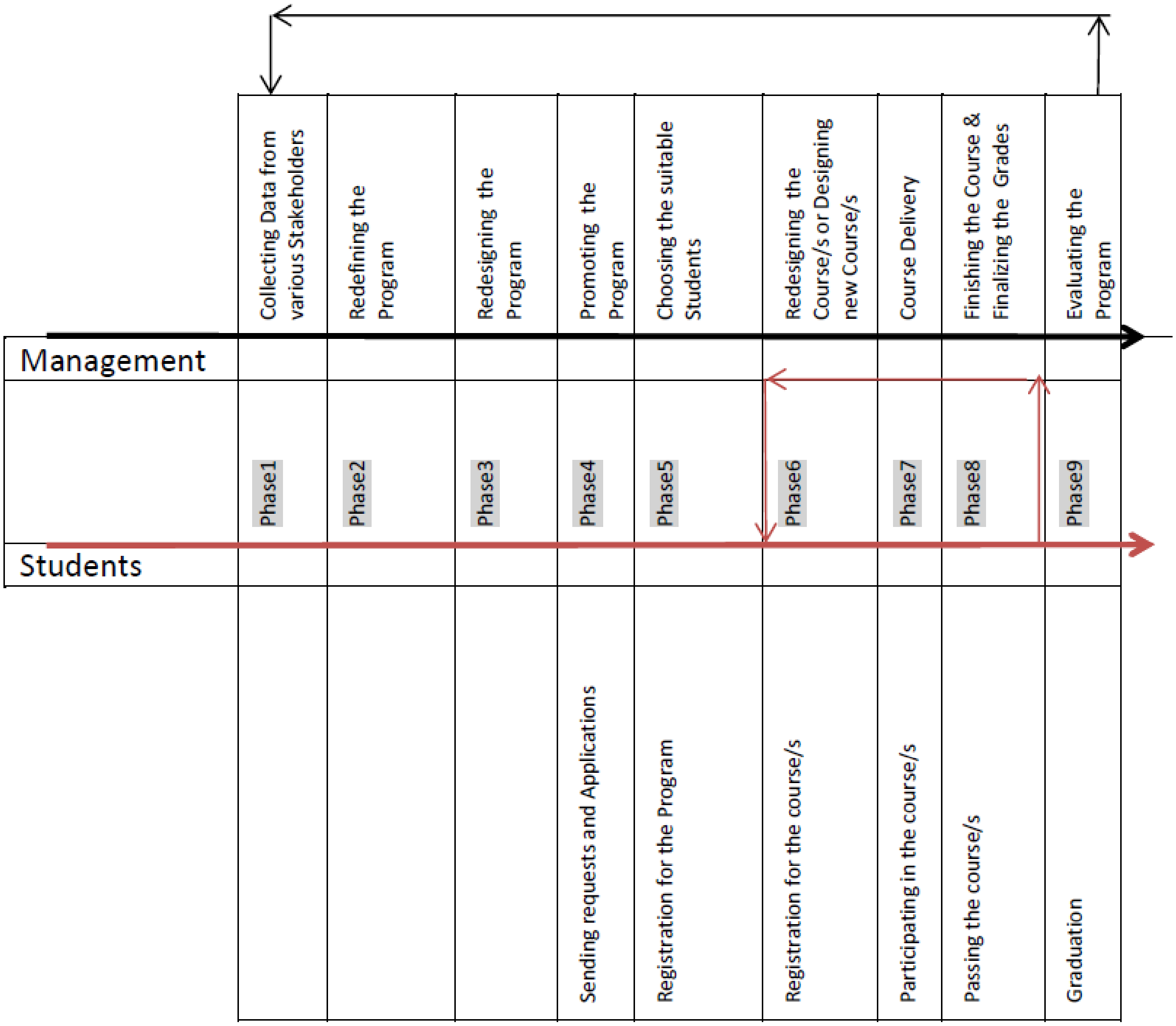


Figure 19. A chain process model (Modified version).

As research is an important component of the academic environment in a university, it should also be a part of any quality management model. Thus, [*figure 20*](#) shows *a chain process model* for research projects, and in this model, we have nine (9) phases for management, and seven (7) phases for students. The phases are similar to what we have for designing a program, and by having similar phases, the indicators are similar too. Therefore, when introducing the phases and the indicators, the focus is on phases and indicators defined for the program, and the appropriate indicators for research would be mentioned - when they are suitable - for each phase as well. This is also due to the fact that the process of defining, designing and conducting a research project, from a quality management point of view, is less complex compared to a program, since only a handful of people (such as researchers, a supervisor, examiners, etc.) in a research team are involved. Moreover, achieving a research project's objectives (as research questions or hypothesis) is straight forward and less complicated compared to a program.

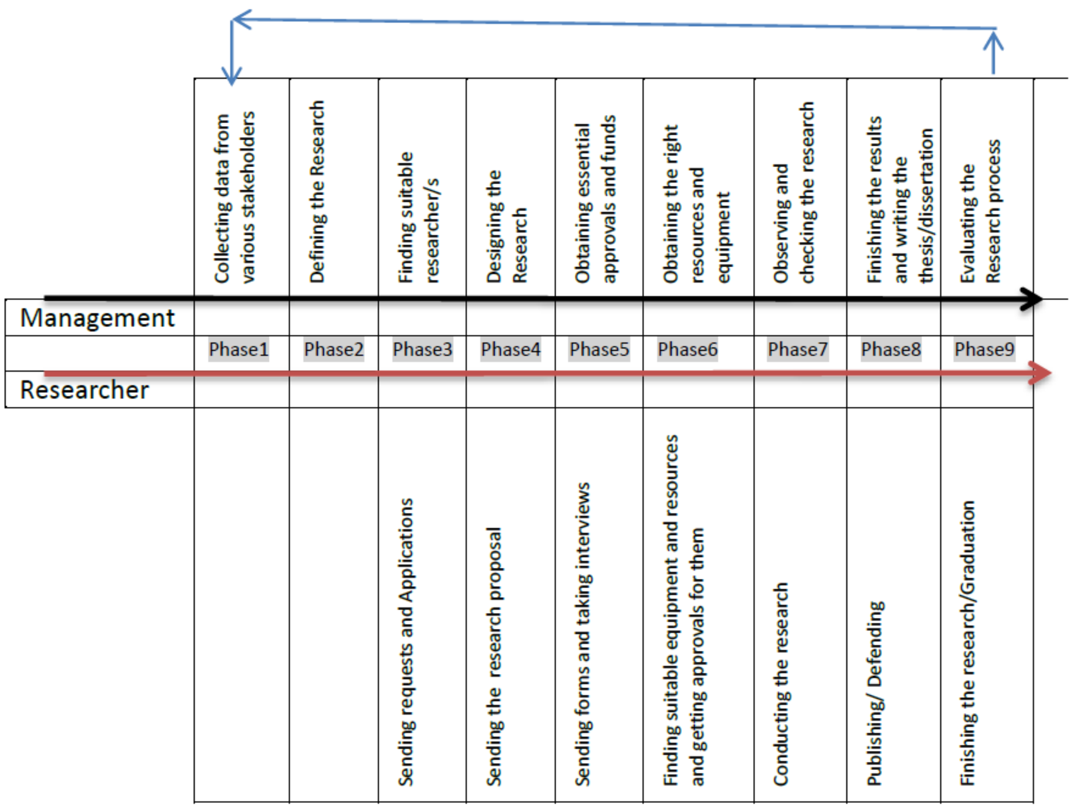


Figure 20. A chain Process Model for Research.

Before explaining *the chain process model* further, and describing the details of tasks and indicators, there are a few points worth mentioning.

2.2.1.1 Tasks. The idea of defining tasks and duties in this model mainly comes from this idea that from a management perspective, it is important and crucial to define the exact duties and responsibilities, especially within cross-functional activities. This point is addressed by Storey (1993) who outlined that if these responsibilities are not clarified, on the one hand, personnel (either faculty or administrators) assume that it is someone else's duty, and on the other hand, some personnel may think that they do not have any control over the situation - as it has not been assigned to them - and the result is stress, confusion and anxiety (Storey, 1993).

For instance, Storey (1993) states that all sorts of debts are the *Financial Division's* concern, while the financial management unit needs accurate information from students' records on the status of student registration and enrolment. Obviously, the staffs responsible for enrolling the students need to collect data and record information correctly and accurately (as it is needed for many other units and for various purposes as well). Therefore, when the information is not updated as quickly and accurately as it should be, the information in the database will frequently be wrong. In that case, the respective finance unit would be in crisis, and the administration staff would try to help them, feeling responsible for the crisis, and they may think that they have failed the whole system. However, if the administration staffs do their jobs accurately and correctly by updating the information, the finance unit would not need their help and there would be no crisis (Storey, 1993).

Therefore, as Anderson (2008) clarifies, to avoid the rise of conflicting priorities and approaches, a clear statement of *roles* and *responsibilities*, *policies* and *processes* must be established to achieve a balance between the need for control and freedom in the different units and components (Anderson, 2008). This means that, according to Storey (1993), there should be a management structure and lines of responsibility and accountability, and the management – at any level or section - needs to determine *who is responsible for what*, *who is responsible to whom*, *the limits and extent of managerial and functional responsibility*, and *key accountabilities* (Storey, 1993). Here, with regard to *the chain process model*, we, mainly address the "*who is responsible for what*" issue in general terms, and other matters, which depend on the university's organizational and management structure, will not be discussed.

In this model, the tasks would also be defined based on the university's main components (which was discussed in previous section *Discussion 2.1*), and every university can adopt the indicators based on its own structure. For example, the component of *the integrity and unity of research and teaching* is mainly a concept, and in each university different groups, departments or units are responsible for playing the roles in this component. Therefore, when the indicators based on one component's task are defined, the management may refer them either to a unit, an individual, or a group. Therefore, in defining the tasks, we only refer to the main components of the university and not the specific unit or group; in this way, every university can adopt this model and refer the tasks to the responsible unit or individual within the university.

The Marketing and Sales unit can be another example. We can have a specific unit for marketing and sales in each school or department, or there can be a single unit for the whole university for managing all the marketing and sales' strategies and tasks. A university can even use both approaches by having a *marketing and sales unit* in each school, while they would be managed by a *marketing and sale unit* in a higher management level in the business components of the university.

In conclusion, in any model for organizational structure, along with any quality model, according to Storey (1993), these points need to be considered:

- At every point in any procedure, responsibilities must be specified.

- Errors and mistakes must be traceable.
- System failure and errors must be correctable (based on policies and procedures, various conditions and situations must be foreseen and for each a solution for correcting the error or fixing the failure must be predicted).
- The system is known and open to all (i.e. everyone knows the components of the system, their linkages and how they communicate - at least the systems one works in).
- Everyone knows and understands the requirements.
- Training is an important factor and the key factor for having an operational system with quality (Storey, 1993).

Regarding the tasks in *the chain process model*, we need to bear in mind that for each phase, the tasks are introduced based on the steps we need to take in each phase and the sequence in which these steps are taken is often vital. Also, the tasks in *the chain process model* are considered as the main steps for implementing the main process; therefore, these tasks complement one another and, from a quality management system point of view, they cover different aspects of the main teaching-learning process.

2.2.1.2 Communication. Communication is an important aspect in any educational system, and it needs to be a consideration in our discussion regarding quality management as well, as Garrison (1989) believes that "*education is a collaborative experience that depends on communication*" (Garrison, 1989, as cited in Verduin & Clark, 1991, p. 179). Likewise, communication plays an important role in the smooth flow of information within the university, while having accurate information is very important in the decision-making processes. In particular, the key point for an online university, which relies on media for communication, is the clarity and accuracy of information, and ensuring that it is sent/ received it on time and by the right people or in the exact database. Usually, there is a main database for all the information (regarding staff, students, courses, faculties, etc.), and then, access (i.e. who should have access to which part of the information) or the authority to change the information (i.e. who can change which parts) should be clarified.

The emphasis on communication here is due to the fact that the whole university works as a system, which includes many subsystems and processes, while they are interrelated and should work in harmony (as previously discussed). Therefore, in a system, communication among different units and components connects various parts of the system (as subsystems or processes), and these communication components are vital to have a proper functional system. By referring to the example of the human body, we need a system of nerves or veins to connect all the units together, and a healthy body has a fully functional connection and communication system in the shape of veins, nerves, and so on.

According to Boles and Davenport (1975) in every communication process, six variables are involved: *the sender, the message, the medium, the receiver, the environment, and feedback*. The message, generally, can occur in two forms: nonverbal and verbal, and in distance education, many messages would be transferred nonverbally and via media. Therefore, a careful selection of words and symbols can help to avoid ambiguity and misunderstanding. The message also needs to be explicit and to the point, and should clarify whether a response is required or not (Boles & Davenport, 1975, as cited in Verduin & Clark, 1991, p. 180).

The method of sending a message or the medium used can be formal or informal: communication channels with provisions for feedback seem to be more effective. It is also important to choose a suitable medium to convey information based on the nature of the receiver and the kind of message sent. Moreover, the feedback provides the opportunity for the receiver to respond to the sender. By receiving the feedback, the sender will know whether the message is being received, understood, and acted upon. Openness and trust are the main characteristics of the environment in distance education, along with other characteristics such as formality or informality, and multichannel (Boles & Davenport, 1975, as cited in Verduin & Clark, 1991, p. 183).

Therefore, in the organizational structure, the communication between various components and units must be defined precisely, which means that staff and personnel must be appointed for each communication task, and the purpose for each communication must be specified. The personnel in each unit should be aware of all the details (the nature of communication, how he/she would be contacted, and when or how long he/she has time to respond, etc.), and the personnel's list of duties and responsibilities with regard to this communication (for providing information, receiving information, or initiating a process, etc.) should be defined.

Here is a list of the issues which need to be determined regarding communication among various components of an online university:

- The nature of the communication (providing information, updating the information, receiving information, initiating a process, etc.).
- An accountable person for this communication in each unit.
- The main media for communication: telephone, chat room, email, voice mail, etc.
- Suitable contact times.
- The time period for responding or getting a response to the initial contact.

2.2.1.3 System and the chain process model. The indicators for a system, typically, are categorized in four categories: *input, context, process* and *output,* while in the introduced *chain process model*, the indicators are defined based on the described tasks for each component in each phase. To clarify how these two methods are related, we first look at the main general indicators defined in literature for an educational system, and then see how they can be related to *the chain process model*.

Introducing the basic elements of an educational system - as *input, context, process and outputs/outcomes* - was discussed in previous sections (especially in introducing Scheerens's work and model). *Figure 21* shows a simple illustration of these elements and how they are related to each other, which can be applied for any educational system at any level - from a national educational system to a local school system. This figure is plain and basic, but it makes it easier to have a better view, in general, of an educational system in its basic form.

The *input*s mainly are related to *financial resources*, *material resources*, and *human resources* invested in various subsystems and processes in the university. The point is that all these three elements are important in providing high quality inputs, and they are somehow related to each other. For example, a university needs financial resources to buy required ICT infrastructure components, and hires experts for running and managing this infrastructure, and these infrastructure components would be part of the university's resources and materials as well. Therefore, on the one hand, this infrastructure as a part of the university's property and resources would be managed by the resources management, and on the other hand, HRM is responsible for hiring and training the staff and personnel needed to run and maintain this infrastructure.

The quality of inputs heavily depends on the university's policies, standards and procedures. By looking at subsystems and processes within the university, all the components of the university bring various resources (financial, materials, or human) into the system, as inputs, to create a teaching-learning environment. To obtain these resources, various components act, based on the university's policies and standards, and follow the required procedures, criteria, and rules. Therefore, the quality of inputs in each phase depends on how these policies and standards are defined, how they are compatible with the university's requirements and needs, how systematically they are evaluated, how well the strategic management plan keeps them updated, and how the resources waste is minimal, and efficiency is high.

Therefore, for input indicators, we generally have various elements which are related to investments of money and time, such as the years of the instructor's experience, the university's equipment, its investment in research and development, etc. Likewise, these investments (such as hiring, buying, training, etc.) would be made based on the policies and standards, generally, after a process of evaluation and analysis, along with discussion and consultations. Consequently, policies and standards, along with sound procedures, play a very important role in managing quality in the university, and these policies and standards in the system model are mainly shown as *context*.

As mentioned in previous sections, with regard to the discussion about context, Scheerens, Luyten and van Ravens (2011) state that context can be interpreted as "a provider of inputs", "a provider of direct influence and control", and as a source of more general "constraints", which interact and interfere with more direct control measures (Scheerens, et.al, 2011, p.47). They also explain that there is a direction for the influence of the context element in any educational system which can be understood by looking at the defined context indicators. For example, they categorized the context indicators as the societal context (such as demographic information), antecedent conditions at the national level (such as cultural aspects), and at the local community level (such as, the organizational infrastructure) (See Table 5) (Scheerens, et.al, 2011).

Therefore, considering different levels of context based on their influence on the university's educational system, context can basically viewed (based on the their level of influence) at three different levels: one context is the external context which comes from various stakeholders outside of the university (such as policy makers, government, businesses, etc.) and influences a vast number of educational systems in various regions, localities, ranks and levels. Examples of context elements at this level can be the labor market, the general state of the economy, or even the general health situation in a country. The second context is the inside context for the whole university, such as policy and procedures for financial management, hiring human resources, buying facilities, designing a program/course, etc. At the third level, we have the context of the course delivery environment, which is the context surrounding the course atmosphere in general, such as grading policy, semester time, exam period, facilities, etc. The context at each level, moreover, is under the influence of the higher level of context. For instance, the school's hiring policies, as a context element in the university level, are based on the country/state's hiring policy, which is a context element in the higher level. The instructor's exam policies – as a context element at the course level - should be within a framework defined by the university - which is a context element at the university level.

Consequently, as Scheerens, Luyten and van Ravens (2011) state, context - at any level and as "a provider of inputs" and "provider of direct influence and control"- plays an important role in creating the quality of the teaching-learning environment (Scheerens, et.al, 2011, p.47). Therefore, universities need to have a systematic process of evaluating and updating their policies, standards, procedures, etc. As these changes and updates are sometimes the result of changes outside of the university, they require the university to adopt new policies and procedures. Thus, for managing quality, it is vital to have a sound systematic process of evaluating the policies, standards and procedures regularly.

For *process* indicators, we need to look at how various resources, as inputs, are used to create the teaching-learning environment. The process indicators are elements which come from actual activities and act at different levels and by various components, such as time spent on teaching, the frequently and quality of interaction, access to various services, participation, evaluation of progress, feedback, etc.

Finally, for output indicators, we need to look at the results of various processes and subsystems, or at the end of the program, the results of the whole system. For example, at the end of the course design phase, we need to see if all the required elements for an online course - such as the syllabus and study guide - are ready with all required details. Likewise, at the end of the delivery phase, for instance, we look at drop-out or failure rates, and at the end of the chain process, which is the end of a program, we look at the graduation rate, and then, as an outcome indicator, we look at the employment rate for graduates. Furthermore, we need to look at the quality and quantity of research at different levels: department/chair, school, and university.

Although establishing indicators in a system is an accepted method for managing quality in an educational system, categorizing them *into input, context, process and output*/*outcome* only gives us a broad picture of the whole system; we need to get more details by looking at many subsystems and processes as well. Therefore, in *the chain process model*, the main attempt is to examine the actual activities and actions undertaken for creating a sound teaching-learning environment. These tasks and functions are part of the main system, subsystems and processes, and *the chain process model,* as a comprehensive quality management model, is a new approach to presenting quality indicators by relating the quality indicators to actual activities and functions taking place within an educational system such as an online university.

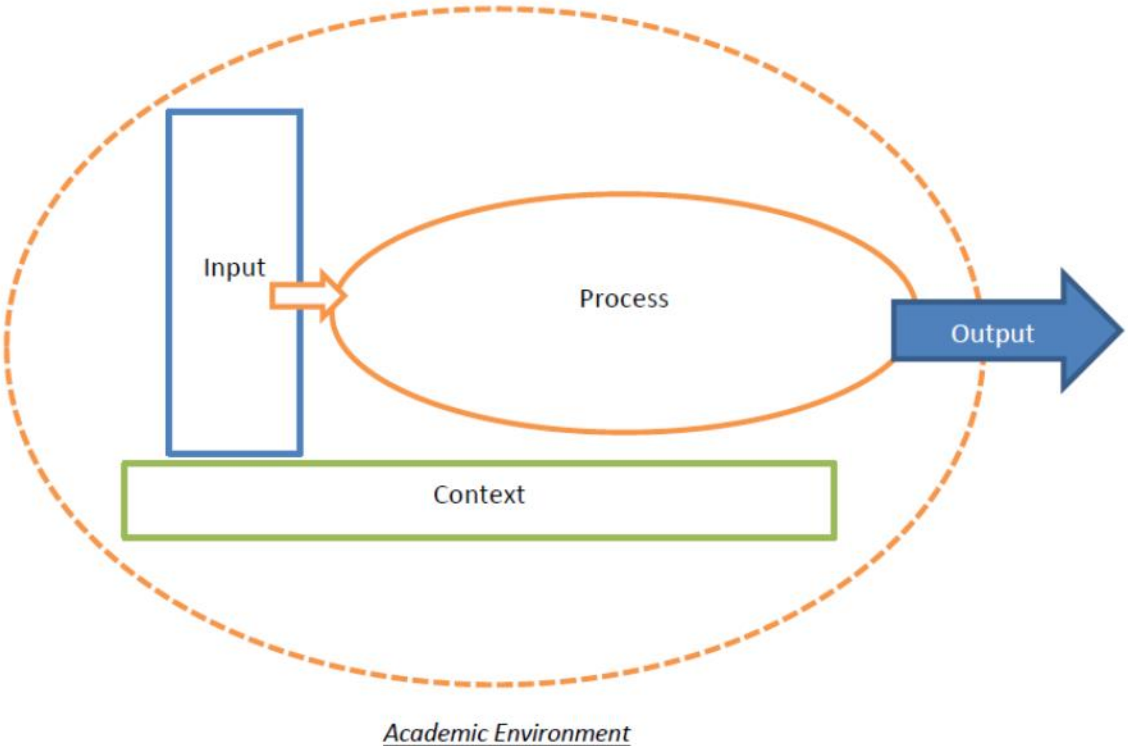


Figure 21: Academic Environment Model.

2.2.1.4. Indicators and the measurement system. As described previously, as a first attempt to design a measurement system for managing quality in an online university, after defining the communications and tasks within university's formal organizational structure, the indicators for these tasks were defined. So, each phase in *the chain process mode*l was described, the essential tasks for that phase were assigned, and the indicators for the tasks were defined and presented in a table. Then, by assigning measurable values to these indicators and inserting these assigned values into one table (which was presented in an interacting table as an Excel file), the result was a measurement table for quality management. Hence, for assigning measurement values to the indicators (for completing the measurement system), the indicators first needed to be organized and clustered in the proper categories.

Initially, after defining the main indicator(s) – from the quality management perspective - for each task in each phase, a measurement system for these indicators was introduced. In this regard, as the first attempt to find the best way to categorize the indicators, the indicators were organized and clustered in four (4) categories:

1- *Guidelines*: These indicators referred to the existence of written guidelines including standards, policies, procedures, along with a system of evaluating and updating them.

2- *Checking and controlling:* These indicators were used when we needed to check and control whether that a specific defined task was done on time and properly based on what was or was not planned.

3- *Feedback:* The indicators in this cluster included receiving and analyzing all sorts of feedback from various components and stakeholders. *Note*: the existence of various feedback processes, instruments and tools, such as surveys, complaints, self-evaluation reports, site visits, etc., were a part of this category, while implementing them and being sure that they are executed properly belonged to the "*checking and controlling*" category.

4- *Performance indicators and statistical data*: This category included data in the PI forms and general statistical information about the university's performance and evaluation.

After clustering the indicators, creating a measurement system for an online university based on *the chain process model* required that the weight for each cluster based on the university's priorities and strategic be determined. For instance, the university's management might decide that the total *Guidelines*' indicators should comprise 40%, *Feedback* indicators 10%, *Checking and controlling* indicators 20%, and Performance indicators and statistical data 30% of the total (100%) quality measurements.

After determining the weighting for each cluster and as the next step for completing the measurement system, the main features for each cluster were introduced:

1- Guidelines:

   a. the guideline for that specific task was established,
   b. it was accessible for the respective unit or individual,
   c. it was clear and easy to follow, and
   d. it was evaluated and updated systematically based on the feedbacks or changes.

2- Checking and controlling that:

   a. the task was done
   b. smoothly,
   c. promptly and on time,
   d. correctly with no failure or mistake, and
   e. by the appointed unit or individual.

3- Feedback:

   a. opportunities for offering feedback are given,
   b. feedback is received by the responsible unit or individual,
   c. it has been analyzed along with other essential data and information,
   d. the feedback systems and processes are updated regularly.

4- Performance indicators and data:

a. they are defined and adequate instruments for collecting/measuring are developed,
b. collecting procedures are defined and established,
c. they are being compared with objectives and goals, and the acceptable rate or measurement is defined for them,
d. they are taken for further analyses in order to improve resources and processes.

For each cluster four (4) components and its characteristics were defined. Therefore, in order to have a quantitative measurement based on these feature, points for each category must be assigned, as well; for example, in *Checking and controlling* cluster, if a task is done smoothly gets 20 points, for being done in timely and promptly fashion 30 points, for no failure or mistake 40 points, and finally, being done by appointed personnel 10 points.

For completing the measurement table, first, the total points for each indicator must be calculated. After the calculation completed for all indicators, the total points for each cluster could be calculated. The total sum of the points for each cluster, then, needed to be calculated based on the weight defined as a percentage for that specific cluster, and this results in a number in percentage; this numeral figure (as a quantity measurement) represents the quality of the university.

In general, this introduced system of preparing a measurement table based on the tasks and their indicators in *the chain process model*, is flexible and can be adopted easily for any number of indicators, along with defined weights and points decided and determined by the institute.

An example of this initial measurement calculation based on the indicators defined in *the chain process model* and the first draft of indicators' clustering system is presented in *Appendix*

1 . This measurement system was first designed for the 109 indicators within initial four (4) main defined clusters that were initially assigned for the tasks in the nine (9) defined phases in *the chain process mod*el, and as mentioned above, at the third step in *Discussion 2.2* section, the system for clustering the indicators was modified (which will be presented in *2.2.3.4.1* and *2.2.3.4.3* parts), while the main concept and method of calculation for the measurement system in the form of a measurement table remain the same.

Then, as the second step in the *Discussion 2.2.* section, a survey based on the primary indicators and their clusters was designed. This will be discussed in the next part.

2.2.2. Conducting the survey. After the initial design for *the chain process model* and its indicator measurement system, at this point of this study, a survey was designed to examine whether the designed models are useful, and the measurement system is practical or not.

For conducting the survey, three (3) documents were prepared and sent to the participants; a short essay as *"Introducing the Models"* that explained the models and measurement system (See *Appendix 2*); an excel file, as a sample of measurement table, which showed how the system of indicators and measurement table works (See *Appendix 1*); and an anonymous questionnaire (See *Appendix 3* for a sample of sent email and *Appendix 4* for a copy of the questionnaire).

The questionnaire had three (3) sections; *Section One* asked the participant to answer seven (7) questions regarding the participant's experience with online education environment; *Section Two* contained seven (7) questions, and asked the participant to evaluate the models based on the explanations presented in "*Introducing the Models"* file; *Section Three* presented a table of selected indicators and asked participants to evaluate each selected indicator based on three (3) aspects: *In Use*, *Not Applicable*, and *Applicable & Desirable*.

The survey was sent to ten (10) individuals and seven (7) completed questionnaire were received. These individuals were mainly the author's colleagues and associated, who are/were involved in an online teaching-learning environment.

Here is a summary of participants' answers:

Table 9

The summary of the Surrey

Participants' information:			
1-	The universities/institutes that participants are active in.	BIHE (Iran)	3
		University of Washington	1
		Massey University, Auckland, New Zealand	1
		Frederick Taylor University	1
2-	Participants' current job/ position in the university/institute	Teaching position	1
		Management position	0
		Both	6
3-	Participants' management responsibilities: (the participants could choose more than 1answer)	Financial affairs	0
		Administration affairs	2
		Academic affairs	6
		Student affairs	2
		Others - Please specify	1

		Director of Research	
4-	Whether the participants are involved in online teaching this year:	Yes	5
		No	2
5-	The time period that participants have been/were involved in an online institute, (either in management or teaching position).	participants for 3-5 years	3
		participants more than 5	2
		participant 9 years	1
		participant more than 10 years	1
6-	Which media/medium do/did you mainly use for teaching online? You can choose more than one.	Textbook	7
		Audio/Video clips	5
		Games	1
		Podcasts	0
		Slide shows/Lecture Notes	4
		Online Quizzes	5
		Discussions	7
		Synchronous interaction	3
		Wikis 0	0
		Blogs 0	0
		Audio/Video Conferencing	4
		Group Activities	6
		Others: *Group Project, Position paper (for defend)*	0
7-	How hard is to work in an online university/institute comparing with working in a conventional/face-to-face university/institute in general?	Very hard	1
		Hard	4
		Easy	2

The models, indicators and measurement:			
8-	***The ideal outcomes*** of having a system of collecting data and measuring the indicators for managing quality in *a university*, should be: (*4 participants answered this question)* *Although difficult, but qualitative assessments are the best outcomes of data collection. Finding most relevant quantitative and qualitative indicators of these assessments can help better qualitative assessments which are required for an education system appraisal.* *All data should be based on the pre-designed measurements/objectives.* *High quality of teaching- precise assessment of performances- adequate assessment of educational level- better quality of monitoring- increasing of individual stress & anxiety.* *The evidence that university education has instilled a new and independent way of thinking for students. The evidence that the university is an instrument for social change and not just a 'business' entity for knowledge creation and dissemination.* *Improves data collection function, Simplifies data analysis, Streamlines evaluation process for quality outcomes.*		
9-	The ***result*** **or** ***effect*** of collecting data and formulating the measurements *on quality* in *an online university* is:	Finding weaknesses and problems Designing better program/course It is very useful	2 1 2
10-	*The models*, presented in this study, *applicable* for an online university:	Yes No	7 0
11	*Useful information*, which are needed for quality management in an online university/institute, from these models and system of indicators, can be received:	Yes No	7 0
12-	The *strengths* of these models and indicators: *They cover most of the processes, activities and strategic-related issues for on line education.*		

<table>
<tr><td></td><td colspan="3">The model diagrams help you to conceptualize the university processes, -The models allow you to see any missing elements more readily.

It shows the process of studying in an online university. It provides the reader the capability of comparing online university with face-to-face university. It is easy to follow and it is an understandable model.

Choosing the suitable students and Designing the course.

It gives flexibility to adjust the requirements based on the received results.

Controlling- Feedback.

It makes decision making process much easier; Management could apply corrective measures much faster.</td></tr>
<tr><td>13-</td><td colspan="3">The weaknesses of these models:

It lacks the processes the whole university must pass to find the best solutions and procedures for online education. Learning process in circle of action is omitted in these models .It also may be too quantitative to find qualitative aspects of the educational issues.

The models seems quite generic and do not clearly correspond to an online university.

I could not find any weaknesses.

The main potential weakness can be found when the instructors' expectations are not at the same of level of compatibility with the online students.

There is no certain diagram or flowchart to perceive the model processes. Flow chart is needed.

This methodology would be very useful for larger educational organizations. However, smaller institutions that are usually run by a small group of faculty and staff members might find implementation of such model challenging and laborious.</td></tr>
<tr><td>14-</td><td>Whether more valuable results by working with the chain process model and its system of indicators would be gathered, or not?</td><td>Not at all

In a few cases

It is very useful</td><td>0

2

5</td></tr>
</table>

The participants' information show that they have adequate experience with online teaching-learning environment, while only 2 participants find it *easy* to work in an online institute and others find it *hard* or *very hard*. Also, in general, all the participants find the models applicable for an online university and believe that useful information from these models and system of indicators' measurement can be obtained.

Moreover, participants stated some features as the models' and the indicator system's strengths; such as, "it covers most of the processes", "it helps to conceptualize the whole process", and "by using it the decision-making process for management is easier and faster".

Likewise, participants mentioned a few weaknesses for these models and the indicator system; such as, "the model is too generic", "it does not cover all the processes", and "its implementation requires too much work which is not practical for small institutes".

It is true that the models and the measurement system are generic and working with all the processes and indicators in the small institutes is not practical, due to the lack of enough personnel or resources to cover all the aspect of this introduced quality management system. Although, by being generic and covering a wide range of the processes and indicators, the measurement system can be flexible enough to be adopted by any higher education institute, and small institutes may adopt it by using it in a smaller framework and structure, while choosing the essential existing processes.

Also, this study focuses primarily on the teaching-learning environment as an effort to cover the essential processes for managing quality in this area, based on the defined components and processes in the designed models. Therefore, there are other subsystems and processes in a university which are not directly related to the teaching-learning environment but can affect the main system and its processes, and, consequently, have impact on the quality of the teaching-learning environment. Although, there are indicators for those processes which have not been covered in the defined measurement system based on the chain process model, in Discussion 2.1. section, they were, briefly, introduced and their functions were discussed. Nevertheless, including all the processes' indicators in detail can be a part of further studies in this regard.

In examining these stated points closely, it seems that the stated issues mainly, reflect the fact that participants did not have access to all the details and descriptions of the models and measurement system, since only a short explanation regarding the models was presented to the participants. For instance, while there is a whole chapter describing the first model (for various essential university components), the survey presented the model without any detailed description. Therefore, it can be said that it is a challenge to examine the designed models and measurement system in practice, and conducting a small survey, with all the limitations that come with this type of examining a conceptual framework (in this case a comprehensive quality management model), cannot present the whole aspects of introduced models and measurement system.

In the final part of the questionnaire participants were asked to evaluate the 22 chosen indicators from 109 initial defined indicators for the measurement system based on *the chain process model*. This process of choosing particular indicators for the survey is necessary, as it was not practical to ask the participants to evaluate all 109 chosen indicators in this study. These 22 chosen indicators were selected for being closely related to the of online universities. Also, the participants were asked to evaluate each one of these chosen indicators based on three (3) features. Therefore, for each indicator on the indicator table, one or two aspects (out of three) needed to be determined (participants could choose more than one feature); one aspect asked if that indicator is used in the quality management system in the university or the institute that the participant works in (which could be marked as "*In Use*"); the second aspect inquired whether the participant finds that indicator applicable for a quality management system (which would be marked as " *Not Applicable*"); the third one asked the participant if that specific indicator is both useful, and he/she is able to work with it as an aspect in a quality management system (which would be marked as "*Applicable & Desirable*").

Table 10

The indicator Table in Survey

Phase 3: Designing the Program					
Task: Addressing the security and integrity of the information system in the school's technology plan.					
1	Indicator	There are guidelines and policies for ensuring security for the Information and Communication Technology (ICT).	In Use 5	Not Applicable 0	Applicable & Desirable 3
Task: Providing essential trainings for faculties and teaching team members.					
2	Indicator	Instructors (or other members of teaching team) participating in mandatory trainings (either online or face-to-face) by ICT unit, administration, library, etc.	In Use 5	Not Applicable 0	Applicable & Desirable 2
Task: Providing a system of solving the technical problems during the "Designing the program" phase.					
3	Indicator	A system of sending notifications regarding technical problems and solving them is available and works smoothly.	In Use 6	Not Applicable 0	Applicable & Desirable 2
Phase 6: Designing the Course					
Task: Determining appropriate faculty and staff qualification for the course.					
4	Indicator	Recruiting is based on university's policies and standards, along with the course's needs and requirements.	In Use 3	Not Applicable 1	Applicable & Desirable 3

Task: Providing the manuals and instruction with details for using and accessing university's website, course pages, library, student support & service, administration, etc.

5	Indicator	There are simple and clear instructions, with descriptive detailed manuals and instructions with pictures and FAQ, while the instructions are clear, understandable, and well written without any spelling or grammar mistakes.	In Use 3	Not Applicable 0	Applicable & Desirable 5
6	Indicator	These manuals are updated and available in various forms (brochures, pamphlets, files in university's web site, etc.), and students can have access to them easily.	In Use 1	Not Applicable 1	Applicable & Desirable 4

Task: Determining the access and authority over the providing the course content and changing it.

7	Indicator	ICT unit follows the detailed manual for giving access and authority over the course content changes and access to the information.	In Use 3	Not Applicable 0	Applicable & Desirable 5

Task: Monitoring the process of course design, while being sure that process goes smoothly and within the university's and school's framework.

8	Indicator	School and instructor/ design team follow the policies, frameworks, and standards for designing the course.	In Use 4	Not Applicable 0	Applicable & Desirable 4

Task: Providing essential training and information regarding how to use technology and equipment regarding designing the course for instructors and design team.

9	Indicator	The essential information and trainings are provided at the beginning of this phase.	In Use 3	Not Applicable 1	Applicable & Desirable 3

Task: Developing the course page in university's website and essential links to the course materials.

10	Indicator	The course web page is ready before starting the semester, which means that all the essential items (syllabus, study guide, professor's complete profile, course materials, etc.) are uploaded in the course page, and students can have access to them and download necessary files without any technical problem.	In Use 5	Not Applicable 0	Applicable & Desirable 3

Phase 7: Course Delivery

Task: Providing access to minimal technology required by the program design.

11	Indicator	Minimal technology predicted in the course design is available.	In Use 4	Not Applicable 0	Applicable & Desirable 4

Task: Monitoring course activities regarding the use of technology and equipment for teaching and learning for: students & personnel & instructors.

12	Indicator	There is a contact office/ person for answering technical question and solving technical problems 24/7, or Asynchronous access 24/7, and Synchronous access at clearly identified times.	In Use 4	Not Applicable 1	Applicable & Desirable 3
13	Indicator	Social contact is provided.	In Use 2	Not Applicable 1	Applicable & Desirable 4
14	Indicator	Quick response with acknowledgment and follow up is available, which would be a follow-through to resolution of the issue.	In Use 6	Not Applicable 0	Applicable & Desirable 2
15	Indicator	Access by attendants to all critical databases and expertise is provided (the personnel in any help desk can have access to the databases needed for finding the essential information).	In Use 3	Not Applicable 0	Applicable & Desirable 3
16	Indicator	General information about online learning, technology requirements, with the resources available to students for technical help and for obtaining the proper software and Internet services required for the course is provided.	In Use 4	Not Applicable 0	Applicable & Desirable 3
17	Indicator	The linkage between different systems and databases is proper and reliable, which means that, for instance, the right students are automatically in the right course at the right time, the right student information is easily available to the appointed instructor and any other authorized person. Also, the instructor needs to be able to manipulate the students' data as needed for the course during the semester; such as, submitting and editing final marks, adding assignments' grades, contacting students as individuals, as a group or even in sub-groups, etc.	In Use 4	Not Applicable 2	Applicable & Desirable 2
18	Indicator	Various units and individuals have the ability to identify problems with policies, procedures, or system, and suggest change.	In Use 3	Not Applicable 1	Applicable & Desirable 4

Task: Ensuring the reliability of the technology delivering system.					
19	Indicator	How many times in a semester/month webpage/email system wasn't available.	In Use 3	Not Applicable 1	Applicable & Desirable 3
Phase 8: Finishing the Course and Finalizing Students' grades at the end of Semester					
Task: Providing support for the instructor and teaching team for designing and implementing a secure and smooth evaluation system (including online test, exams, projects, etc.) for the course.					
20	Indicator	A safe and secure system for assessment and evaluation for the course exists.	In Use 5	Not Applicable 1	Applicable & Desirable 2
Phase 9: Evaluating the Program					
Task: Selecting various appropriate evaluation methods.					
21	Indicator	The policies, standards, and procedures for evaluating program from various perspectives exist and followed; for instance, evaluating program effectiveness by collecting and analyzing data and information regarding enrollment, costs, and successful / innovative uses of technology.	In Use 4	Not Applicable 0	Applicable & Desirable 3
Task: Evaluating the strategic plan.					
22	Indicator	Comparing the objectives and goals predicted in strategic plan and in "*defining the program*" phase with real outcomes and impacts of the program at the end.	In Use 2	Not Applicable 0	Applicable & Desirable 5

Table 10 shows a summary of the participants' evaluations. As can be seen, the participants find most of the indicators "*in use*" and "*applicable & desirable*". There are eight (8) indicators from twenty-two (22) introduced indicators, and each are found *"not applicable"* by one of the participants. By examining these indicators, no real connection or correlation was detected by this study's author, and it seems that these choices have been made based on participants' personal experience.

The main point, as the concluding point for the survey, can be that the participants find the designed models and measurement system generally useful and sound, and most of the chosen indicators are marked as "*in use*" and "*applicable and desirable*". Based on this conclusion and other considerations - which will be discussed in the next part- the indicators and their categories were changed and modified to improve the measurement system and make it clearer.

2.2.3. Finalizing the chain process model and its indicator system. After designing the preliminary indicator system, conducting the survey, and noticing some new considerations, it became clear that the initial categorization for indicators was based on a simple method of categorization without any systematic base. Since the categorization for indicators plays an important role in this designed quality management measurement system, the measurement system can improve considerably by having a methodical system for clustering the indicators.

Therefore, by examining the literature again, it was decided to adopt Doherty's (1994) quality process description, which will be discussed in detail in the next part (*2.2.3.1.*). This decision was made as the three quality processes- *quality assurance*, *quality control*, and *quality assessment*- from Doherty (1994), covered the three initial indicator categories: *Guidelines, Checking and controlling,* and *Performance indicators and data* (which was discussed in part *2.2.1.4.*). These quality processes are presenting the quality management processes with a system approach. Also, by examining the *Feedback* cluster again, it became evident that there were only a few indicators in this category, although feedback plays an important role in a quality management system. Therefore, instead of having a cluster for *Feedback* with a few indicators in the measurement table, a whole complete system for *Feedback and Evaluation,* with various processes and subsystems, will be introduced and discussed in part *2.2.3.2.*

Hence, as the final step for completing the design for measurement system based on *the chain process model*, in the next parts, this new system for clustering the indicators, along with *feedback and evaluation* subsystem will be introduced. Then, in the last part in *Discussion 2.2.* section, the whole *chain process model* with its phases, tasks for each phase, and the proper indicators for each task, as an indicator table, will be described in detail. These new indicators will then be formulated in a new measurement table along with the new clustering and the categories' features to complete the measurement system based on *the chain process model*.

2.2.3.1. The quality management processes. In the literature review (page58) Doherty's (1994) description for quality processes was quoted, and as mentioned in the previous part, these quality processes are adopted as the main categories for clustering the indicators.

First, a short explanation regarding each process and how they fit to the indicator system within *the chain process model* is presented here:

1. *Quality assurance*: the goal of this system is to ensure that errors are designed out (as far as possible), and it is based on "feed forward" (Doherty, 1994). The indicators in this category refer to the existence and implementing of written guidelines including standards, policies, procedures, along with existence of a system for evaluating and updating them.
2. *Quality control*: this system's purpose is to gain information to be able to correct the errors, and it is based on "feedback"; feedback from, mainly, students and staff, and ideally, from employers. The requirement for this system is regular monitoring and reviewing the programs, modules, and courses (Doherty, 1994). The feedback type in this category is the *formative* type, which will be discussed in the following part. The

indicators in this category are used when we need to check and control whether that specific defined task is done on time and properly based on what was planned or not.

3. *Quality assessment*: this system is based on judging performances against criteria (Doherty, 1994). The main indicators in this category are performance indicators and data, and evaluating the university's performance against standards and criteria is the *summative* type of feedback, which will be discussed in next part.

4. *Quality enhancement*: this is a system that consistently and consciously works to improve the quality performance of any process in the whole system (Doherty, 1994). This system will be defined and explained in next part by introducing the feedback loops within *the chain process model*.

5. *Quality audit*: this is a system of auditing, which checks if the system is doing what it is saying that is going to do, while there are written and documented evidence to prove it (Doherty, 1994). This system requires, systematical and periodical auditing (both external and internal), and, as it is auditing, and evidently needs to be designed and done from outside of the academic environment.

6. *Quality management*: this is a system of setting up a complete process to ensure that the quality processes (which are the above processes) actually are happening (Doherty, 1994).

As, the *quality management* is about the whole process of managing quality in an institution, for clustering the indicators in *the chain process model*, three quality processes are chosen to be the main categories: *quality assurance, quality control*, and *quality assessment*.

Also, for *quality enhancement* process, a sophisticated system is needed to be developed, and in this study, a *feedback and evaluation* subsystem for *the chain process model* will be introduced, which can be a part of quality enhancement process, while, each institute may partake more subsystems based on its needs (See *2.2.3.2 part*).

Also, a *quality audit* should be done by the university's internal or external associates, who are outside of *the academic environment* process. Within the discussion regarding the details for *the chain process model*, the relevant cluster for each indicator will be mentioned too.

As mentioned above, choosing these three quality processes- *quality assurance, quality control*, and *quality assessment*- can fulfill the aim of having a systematic approach for clustering the indicators. This is due to the fact that these three processes are the main parts of the whole process of quality management. Therefore, in this quality management process, first, we need to have guidelines and instructions regarding how to do the assigned tasks, then we need to control the process and check whether the task is done based on the university's assigned guidelines and policies. As the last step, we need to see the evidence, in the form of the whole system's performance, to have the proof that we reached our goals and objectives (which were formulated as a process and its defined tasks) and the whole system works properly. Then, by having the whole subsystem for *feedback and evaluation*, we can enhance the quality within the main system.

Therefore, for completing the measurement table, as the last part of the designed measurement system for *the chain process model*, the three initial categories: *Guidelines*, *Checking and controlling*, and *Performance indicators and data*, will be replaced by these three new categories: *Quality Assurance, Quality Control*, and *Quality Assessment*, as the main categories for clustering the indicators, and the *Feedback* category will be replaced by a whole separate process of *Feedback and Evaluation*. Also, by explaining the features of each cluster here, it will be clarified that how these categories are adopted.

Although in this step the indicators' categories are different from the initial clustering, the process for completing the measurement table is the same and similar to what was explained in part *2.2.1.4*. Therefore, after assigning at least one indicator for each task in the nine (9) phases of *the chain process model*, a suitable cluster will be assigned for each indicator. Then the weight for each cluster, based on the university's priorities and strategic plan, should be determined. For instance, we may decide that, from the total quality measurements (100%), we want to assign 50% to the *Quality Assurance* indicators, 30% to the *Quality Control* indicators, and 20% to the *Quality Assessment* indicators.

For completing the measurement table for the quality management system, we need to evaluate each indicator based on the defined features for each cluster, which are defined as these:

1. Quality Assurance: The indicators in this cluster indicate that there is a guideline, policy, standard, etc. *for conducting that specific task*, and:
    a. it is approved by respective authorities, either inside or outside the university,
    b. it is accessible for respective unit(s) or individual(s),
    c. it is clear and easy to follow.
2. Quality Control: The indicators in this cluster indicate that the task is done based on the specified requirements (including guidelines, etc.), and then, *the performance of the system* needs to be controlled by checking that the task is completed:
    a. promptly and on time,
    b. correctly with no failure or mistake,
    c. by appointed unit(s) or individual(s).
3. Quality Assessment: The indicators in this cluster *assess the system's performance* by indicating that:

a. The assigned task's description (in the form of guidelines or policies, etc.) is relevant,

b. the assigned implemented instrument for undertaking the task is suitable and useful,

c. the collected information regarding the system's performance regarding the implemented task is useful for improving the usage of the resources and processes.

Regarding how these features are chosen, we need to examine how tasks, indicators, and these defined features play their roles in this quality management system and how they will be used in the rating process for completing the measurement table. Also, it is important to bear in mind that these indicators are different aspects of various quality processes in one whole quality management system, and the role of the chosen features is to help us to examine, assess, and rate system's performance and form a measurement table. In preparing the measurement table for the designed quality system based on *the chain process model*, the first step is to determine that a task should be done. Then at least one *quality assurance* indicator defines *how* that task needs to be done. While the defined features for this indicator in this quality process category identifies whether the instruction (in the form of a guideline) for undertaking that specific task is approved by the respective authorities, the personnel who should do that task have access to this instruction (which means they know how to do the task based on university's requirements), and the instruction is clear and easy to follow.

So, when the task is done based on this assigned instruction, then the *quality control* process reviews if the guideline for implementing the assigned task is followed, and the task is done based on what was supposed to be done. Therefore, the features for this indicator in the process *examine the performance of the system*, by determining whether the task is done on time, without any mistake or failure, and by assigned personnel. At the end, the *quality assessment* process *assesses the system's performance* by indicating whether the description for doing that task is relevant to what was expected to be done, it is suitable and useful, and at the end the information gathered for assessing the implemented task can help the quality management system to improve the usage of the resources and processes (which means that we are measuring the right performance indicators and looking at the right results).

For making it easier to follow the indicators in the measurement table and organize them, a coding system for indicators is used and for each indicator a specific code is assigned, which includes: the phase number/ the task number/ cluster's code/ indicator's number within its assigned cluster. While, cluster's code includes two letters from each indicator's cluster's name; for *Quality Assurance*, the code is ***AR***, for *Quality Control*, the code is ***CT***, and for *Quality Assessment*, it is ***AS***.

Moreover, there are two important points regarding the *Quality Assurance* cluster worth mentioning. One point is that *Quality Assurance* cluster, mainly includes basic guidelines in various forms (such as, policies, rules, regulations, standards, etc.) which should be prepared before starting a program. Therefore, there should be a list of essential guidelines at the starting point of the process for having a new program and these guidelines will be mentioned when they are required and needed for undertaking that particular task. Also, by putting them in the measurement table, we will be able to extract a list of the required guidelines by having all the indicators for *Quality Assurance* together.

Also, another key fact regarding guidelines is that although guidelines play an important role as the quality assurance tool in the university, they can be a source of trouble making too, as, the university can be sued frequently because of them. Therefore, in designing each guideline in detail, the university's top management must get obtain legal advice regarding how to carefully develop and design these guidelines to avoid any legal trouble.

To finalize the measurement system, the points for each category should be assigned by dedicating points for each cluster's three (3) components as its characteristics. For example, in *Quality Control* cluster, if a task is done in a timely and promptly fashion gets 30 points, for no failure or mistake gets 40 points, and finally, being done by appointed personnel gets 30 points. Similarly, suitable points need to be assigned for each cluster's three (3) features.

In summary, the process for developing a measurement system -in the form of a measurement table- starts by, first, putting all the chosen indicators in the measurement table, and then calculating total points for each indicator (based on the assigned points for each feature). Following that, for each indicator the sum of total points should be calculated, and next, the sum of total points for each cluster can be calculated by adding all the points for each indicator. The sum of total points for each cluster, then, will be calculated based on the assigned weight (as the percentage defined for that specific cluster), and at the end, we have **one number** in percentage which shows a numeral figure between zero (0) to one hundred (100), as a quantity measurement for quality in the university.

Appendix 5 shows an example of the final measurement calculation based on the indicators defined in *the chain process model* (which will be discussed in part *2.2.3.4*). This measurement system can also be easily adopted for any number of indicators, along with defined weights and points decided and determined by the respective institute. In this study, finally, for these nine (9) phases, in total, 191 indicators are defined, and the measurement table is prepared and finalized for these 191 indicators.

Consequently, each university needs to develop its own measurement table based on its priorities and availability of its resources. For example, during the launching a new program, the priority may be for the indicators in *the quality assurance* and *the quality control* clusters, so they get higher weights in the measurement table. After launching the program and implementing it however, gradually the priority for the indicators in these two clusters can be reduced, and the indicators in the *quality assessment* cluster may get higher scores. (See: *Appendix 5*)

2.2.3.2. Feedback and Evaluation (as a proposed system for Quality Enhancement). Doherty (1994) states that for quality enhancement, we need to have a sophisticated system for any process - either educational or otherwise - as conscious methods of addressing and solving problems in the university. (Doherty, 1994)

In this regard**,** a system is proposed concerning the quality enhancement in *the chain process model* based on *feedback and evaluation*. This system has various aspects and contains different processes and subsystems, as establishing a feedback and evaluation system can be done for different purposes. The various aspects of feedback and evaluation system regarding *the chain process model* will be discussed.

One form of the feedback and evaluation process is *future- oriented,* which helps decision makers to plan new programs. It can identify new procedures, new goals, as well as potential stakeholders or target groups, which is the main concept in *phase 1*, "*collecting data from various stakeholders*", in *the chain process model*.

This aspect of the evaluation process exists because of the dynamic nature of the educational system. Anderson (2008) states that the nature of any credible educational endeavor is a dynamic one which includes many aspects of an educational institution, such as responding to new knowledge/understandings and approaches to the disciplines, to changing student demographics, to new employment market needs, etc. (Anderson, 2008). In other words, both the academic and business worlds are changing quickly, requiring the universities - as the main providers of expert human resources for the society in general- to respond to these changes properly and promptly. Therefore, having a system of collecting and receiving feedback, along with evaluating the university's activities is an essential element of every university.

With respect to online education, according to Anderson (2008), one important aspect of this dramatic change is the fact that online learning technologies evolve very quickly and often unexpectedly. Therefore, the students' expectations would change, and as the result the curriculum and other features of teaching- learning should change as well. Managing these changes effectively and successfully is essential. Consequently, another aspect of managing change is to create balance between constant changes every time a new product or idea comes into view, and maintaining a system long after it has been outdated by a better proven system (Anderson, 2008).

Evaluating the past activities and outcomes is predicted to be done in the last phase (*phase 9*) of *the chain process model*. It is another aspect of evaluation, which leads to accountability or justification of program operations. Verduin and Clark (1991) state that this form of evaluation is called *summative*, which gives qualitative and quantitative data at the summation of program's activities and can present a review of what has happened. This form of evaluation tries to discover whether the program made a difference or not (Verduin & Clark, 1991, p.184).

Verduin and Clark (1991), also, explain that the third form of evaluation, *the formative evaluation*, focuses on current efforts and is used to determine whether the program needs improvement or not. This is an evaluation process which seeks information about and monitors the program while in the implementation stage, with the aim is to discover any shortcoming or problem needing remediation. It means that in this type of evaluation, we need to determine that to which extent the program is operating as intended (Verduin & Clark, 1991, p.184). This form of evaluation should be a part of all the activities and during the whole process of creating an academic environment in *the chain process model*.

An important part of any feedback and evaluation system is receiving feedback from various stakeholders and colleagues which provides the university with a better sense of what is happening within the program. Consequently, for presenting this important aspect of the feedback and evaluation system in *the chain process model* (see *figure 18*), the blue brackets show the possible feedback loops.

One loop is between the phases "*defining the program*" and "*evaluating the program*". For defining/redefining a program, we need to have feedback from various involved components, divisions and individuals. This feedback loop is for setting a more suitable and realistic set of goals and objectives for the program in define/redefine phase. Likewise, after the program is implemented, the university can have actual program's outcomes and impacts, and use them for marketing strategy by presenting them during the promotion phase; information such as the companies who hire the graduates from the program, the graduates' salary and income, research opportunities, etc.

Another loop is between the phases of "*designing/redesigning the program*" and "*evaluating the program*". The aim of having this feedback loop is to have a better design for the program, which can focus on various features of the program, such as designing new course(s)/excluding particular course(s), or changing the sequence of the courses.

Likewise, having a feedback loop between the phases "*course delivery*" and "*finishing the course*" and another feedback loop between the phases "*designing/redesigning the course*" and "*finishing the course*" help us to modify the course design and its delivery, and have a more qualified course. The feedback obtained from the loop between "*design/redesign the course"* and "*finishing the course"* may show a need for changing some assignments, due dates, or even the assessment methods/system in the course. While having a feedback loop between the "*course delivery*" phase and "*finishing the course*" phase is helpful to improve the teaching-learning environment created in "*course delivery*" phase. This may include, changing the schedule, improving online classes or forum discussion, etc.

These feedback loops should be a part of the whole feedback and evaluation system, and they can be useful when we have them as the processes within the whole *feedback and evaluation* system. In these loops, we do not only receive or collect feedback from various involved units or individuals, but also, we need to be able to use those information and data to make essential changes, otherwise the feedback process would be a waste of resources. Therefore, these feedback loops are the processes within the *feedback and evaluation* system, and we need to have other processes along with them to have a complete evaluation system.

Likewise, in every *feedback and evaluation* system three (3) main processes are needed. The first process is for receiving feedback; collecting and receiving data and information from various sources (depends on the involved units/divisions or individuals in that particular *feedback loop*) and through different methods and instruments (such as performance indicators and statistics, surveys, interviews, complaints, and so on). For instance, conducting different surveys is one instrument for receiving stakeholders' feedback. In this regard, the universities, usually conduct various surveys - mainly at the end of the courses or program - by sending questionnaire to the students, instructors/teaching teams, or other respective divisions and units.

Then, as *the* second process, we need to have a process of analyzing this data/information received via various means and instruments from various resources. This analyzing process, , can be different due to various purposes, as was discussed before. Finally, the third process is to make necessary changes based on the findings in the second process.

Consequently, having a *feedback and evaluation* system completes this cycle of *planning, designing, delivering, and evaluating*, and it is important that all the components of the university be involved in this cycle by being a part of systematic evaluations and assessments. By involving all the components, units, divisions, and individuals in these processes, we can develop a dynamic quality management system and provide a teaching-learning environment with high quality.

Also, when we talk about evaluation and changes, it does not mean that for higher quality, we require a complex process to bring beneficial changes in the whole system, as sometimes, even small changes suggested by a component/division can make a big difference and cause various systems to work more smoothly and efficiently. For instance, by involving the administration component in the feedback and evaluation system, we may find out that new documents should be provided (either by students, or by faculty members) for better performance, or admission may see the need for some changes in admission rules and regulations for having more qualified students after considering program's outputs and outcomes. Also, the financial management may find some weaknesses in the payment system, or they may realize that more resources and aids for a program can be provided, based on its performance or popularity. Further, strategic management may realize the need for some modifications or changes in a program based on the responses received from various stakeholders.

Therefore, a subsystem for *feedback and evaluation* (as a part of a *Quality Enhancement* process*)* should be designed with these features:

a. opportunities for providing feedback are given,

b. feedback is received by responsible unit or individual,

c. feedback is analyzed along with other essential data and information,

d. the feedback systems and processes are updated regularly.

2.2.3.3. Quality models. In the literature review, the main quality models for educational systems are discussed, which can shed some light on specific and limited aspects of quality, useful for understanding the concepts and conditions of quality regarding each model. Therefore, in this section, when we discuss *the chain process model phases*, for each phase the suitable quality model/s for that phase would be introduced as well. This is an attempt to see how we can have a combination of various quality models in different situations and processes for a range of activities in an academic environment. Also, by focusing on one or more quality models for each phase, we would have a better understanding of managing quality for its various processes and situations.

2.2.3.4. Chain Process Model. After discussing these general points and issues, the main *chain process model* will be discussed in detail.

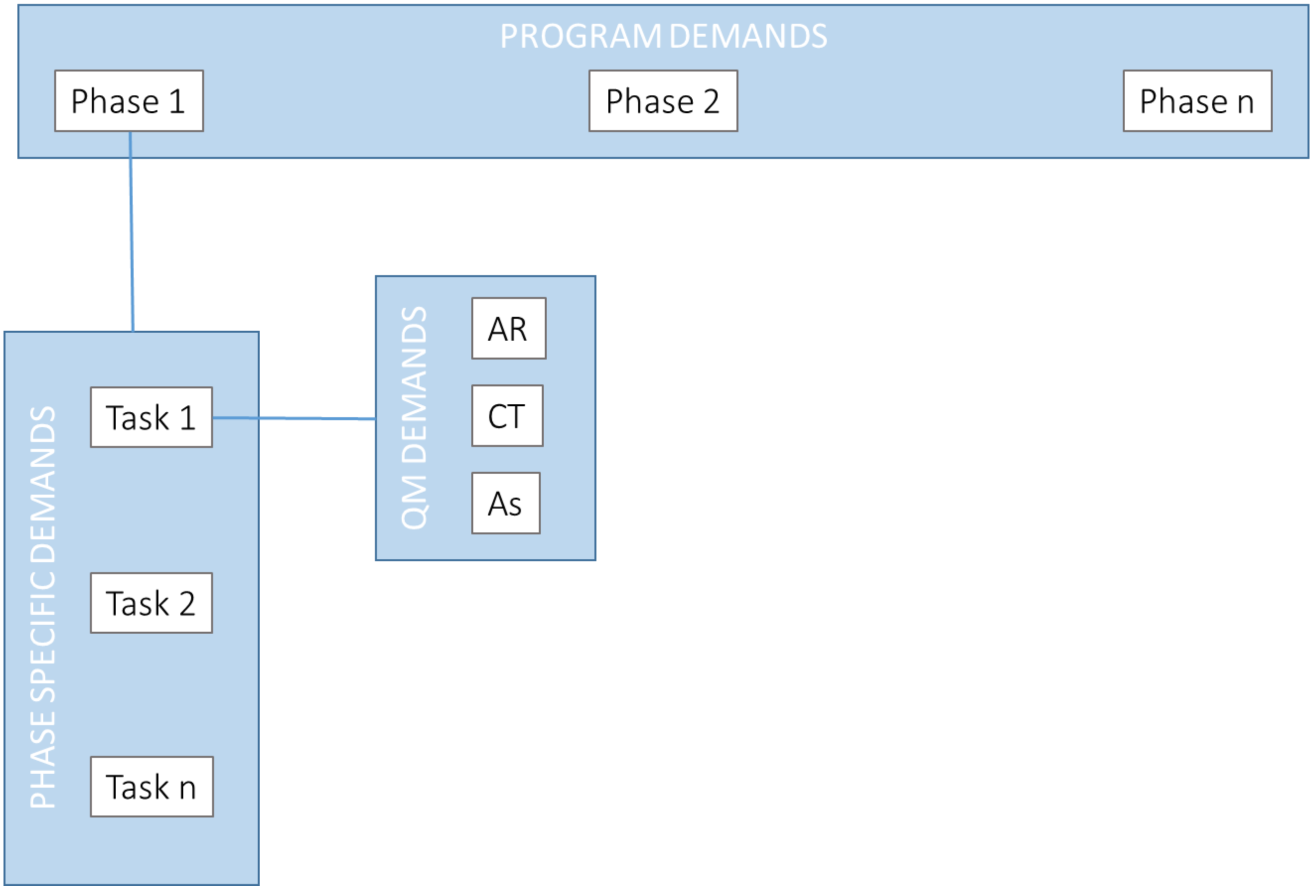


Figure 22. Simple illustration of *the chain process model*.

Figure 22 shows a simple illustration of *the chain process model*. In this part, a detailed discussion regarding the phases and the assigned tasks for each phase is offered. The phases in *the chain process model* represent the program's demands; that which needs to be done to create an academic program in a university (especially in an online university). Then, the tasks in each phase address the specific demands for each phase or in other words, what should be done to complete the main process described for that phase. From a quality management perspective, specific indicators for each task should be defined, to be sure that designing and implementing the program are done with quality. So, the indicators provide the demands of quality management.

Therefore, in the next part (2.2.3.4.3) all the assigned tasks and their defined indicators are presented in a table based on the described indicator system. Also, for having a complete measurement table, these indicators are put in an excel file as an example, which is presented as *Appendix 5*.

2.2.3.4.1. The main phases and tasks for the chain process model. Here the main phases and their associated tasks are discussed in detail, following which the defined indicators for these tasks will be presented in one table in the next part.

Phase 1: *Collecting data from various stakeholders*.

In the discussion regarding strategic planning in the previous section, it was mentioned that Moore and Kearsley (2012) indicate that one of the main processes for strategic planning is "continuous assessment of changing trends in student, business, or social demands". (Moore & Kearsley, 2012, p.175) Also, by considering this process along with other processes for strategic planning, the strategic management component need to monitor changes in both inside and outside environment and collect data and information from various stakeholders; such as employers, alumni, graduates, funders, labor market, faculty, administrations, government, policy makers, parents, the community, professional and accreditation bodies, etc.

Also, Scheerens, Luyten, and van Ravens (2011) believe that the suitable responsive attitude towards these changes (which are primarily the result of influence of various elements of context) is to develop an educational system with an infrastructure and established mechanisms to deal with responsive issues. And the key issue here is to realize the goals and objectives based on what is required, and try that the intended outcomes would be in line with these expectations (Scheerens, Luyten, & van Ravens, 2011, p.48)

Therefore, observing both academic and business worlds, for the purpose of detecting changes, is an essential task for strategic planning. This means that strategic management as a part of its development plan, needs to monitor changes in both inside and outside environment and collect data from various stakeholders. The key issue would be that the strategic management be able to respond to these changes accurately and promptly. In other words, the changes in academic and business worlds would demonstrate new needs and demands for new programs and research, and a university needs to be vigilant to use these opportunities and be able to maintain and confirm its position in academic worlds. Therefore, collecting data and information from various stakeholders either outside or inside of the university is the first step for developing a new program or research project in an online university- another main process for strategic planning in a university (See *Discussion 2.1*).

In this phase, "*the legitimacy model*" for quality can be used for external stakeholders, as a part of competition with other institutions and responding to other demands from various stakeholders. The indicators can be public relations, marketing, public image, reputation, status in the community, evidence of accountability, etc. Then, for internal stakeholders and developing (or updating) the development plan, the quality model can be "*the organizational learning model*", which is applicable when the university is facing new things or changes (internally or externally). The indicators, also, are external needs and changes, internal process monitoring, program evaluation, development planning, etc.

Tasks:

1.1 Collecting data from various stakeholders, such as employers, alumni, graduates, funders, the labor market, faculty, the administration, government, policy makers, parents, the community, professional and accreditation bodies, etc. This task can be managed by Strategic Management component.

Phase 2: *Defining the program:*

In this phase the university's management decides to have a new program or a new research project. The decision is based on the information collected and analyzed from different stakeholders (labor market, Alumni, government, university's schools, etc.) along with the university strategic and development plan. As it was mentioned in previous section, one of the main strategic planning processes, according to Moore and Kearsley (2012), is "choosing among existing options so that the priority goals can be achieved with acceptable quality and the available sources" (Moore & Kearsley, 2012, p.175). Also, strategic management has an important role in this phase, as it requires gathering and analyzing vital information, and then present university's management with a proposal for new program or research project, so that it may make a decision to initiate this new program/research or not. When the university's management (depends on the university's structure and policies) approved the new program/research, the school to deliver the program/research starts working on designing the program/research in further detail. This phase, "*defining the program"*, is like preparing a blueprint that gives an obscure picture about how this new program/research should roughly look like.

At the beginning of this phase, a dialogue begins between *Strategic Management*, *Marketing and Sales unit* and *the School* which is to design and deliver the program/research. Then a proposal for attaining the essential approvals would be presented to the Board (or any reference group based on the university's organizational structure). A process of discussion, analysis and questions between the involved units and components would continue until the needed approvals for having the new program/research are obtained. In this process other components and units, such as *Financial Management*, *Human Resource Management* (HRM) and *Resource Management* would be involved in providing essential information to assist the university management to have a clear view regarding the resources available for this new program, along with a clear estimation about the new opportunities that this new program can bring to the university. In this phase, the university's context which contains procedures, rules, charts, etc. plays an important role, and being aware of them and following them is vital.

From a quality management point of view, for defining and having a new program some important issues should be clarified, such as compatibility with the institution's mission and plan, marketability of the new program or accessibility of grant or other financial support resources for the research project, being able to provide vital resources for it, etc. Further, all of the policies and procedures should be followed and completed systematically and thoroughly. This is due to the fact that everything needs to be described and planned before starting the program/research to avoid troubles and problems in future during program/research implementation.

One point to consider here is that there is a close connection or even a loop between these first two phases, "*Collecting data from various stakeholders*" and "*Defining the program*". This connection means that collecting data and defining the program are not two completely separated processes, as one ends and the other starts after that. We may come up with the new ideas about establishing a new program, and then, by reviewing and analyzing the data and information collected from various stakeholder, we find supporting evidences for the initial idea. On the other hand, the idea for a new program would be appeared and proposed after collecting and analyzing data and information. Either way, the important point is that establishing a new program needs to be done after considering and analyzing many different aspects, including potential candidates, required resources, etc.

The quality model in this phase would be "*the goal and specification model*". In defining the new program/research project and preparing a plan for it, we need to determine the goals and objectives for this program/research as well. These objectives and goals also need to be compatible with the strategic development plan, along with the institution's policies and standards. The goals and objectives will be used in the evaluation and assessment at the end of chain process model.

Tasks:

2.1 Preparing the detailed information sheets about the new program or new research project by specifying the educational objectives for the program/research and explaining how the program/research emerges from and contributes to the mission, goals and objectives of the university (AACSB International, 2007). This can be done by the respective school which is going to execute the new program.

2.2 Examining the suggested program/research plan for deciding whether to implement it or not. This can be done by the Strategic Management component.

Phase 3: *Designing the program:*

After receiving the approval for starting the new program/research project, the school starts to work on its design. In this phase a detailed plan for the whole program or research project would be prepared. It begins with translating the objectives and aims, mentioned during the defining program phase, into the courses and activities, along with policies and procedures which can lead and help the students reach those learning objectives. The main issues in this phase is to identify which courses and activities are needed to achieve the program's/research's aims and goals, and to determine at which stage they should be presented. Obviously, this translation has a different meaning for different universities as well, due to the fact that policies, standards, and methods vary among the universities. For example, the length of semesters varies among universities, and the number of credits or courses that a student can choose in each semester, also varies. For example, when in a university the semester is defined for a three months period, the amount of student's workload for one semester is much less than students who pass courses during a six months period semester. Also, for research projects, every university has its own policy and standards regarding time and resource allocation etc. which affects the research project's design.

Designing a program has another aspect, as there are some features which need to be defined based on the nature of the program. For example, there are specific qualifications (either for the students or faculty) and conditions (such as each course's atmosphere, required facilities and applications, etc.) that should be considered for each program. Therefore, there are specific tasks and related indicators that are about these specific qualifications and conditions.

Furthermore, we need to determine how many courses with how many credits would be in the program in total, along with which activities (for example research projects, practicum, thesis, etc.) should be included in the program. Next it must be determined which courses or activities are prerequisites for other courses, which courses need to be taken concurrently, and the shortest time (in semesters) a student must complete to finish the program. Another issue, moreover, is to consider the resources, such as financial, technology, library resources, personnel, instructors, course design teams, website space, etc. are needed for this new program/research in details. Specific policies and procedures may also be deemed necessary for this new program. It is due to the fact that every program has its own needs and necessities, which means that we should include extra policies and procedures for this program, and it must be observed along with other policies and procedures defined for all the programs in the university.

Therefore, in this phase the school and the chair/ department responsible for offering the program should work closely with other service components and units, especially with the "*unity and integrity of research and teaching*" component, to make a detailed plan. In this phase everything is still on paper, and the objective is mainly to prepare the information with all the vital details for the program/research project along with assigning the involved units and personnel before starting the program/research.

In this phase, the *"the resource-input model"* for quality can be applied. We need to determine which resources are available for the new program/research, and predict the output/ outcomes as well. Also, the program/research design needs to be based on the goals and objectives defined in the second phase.

Tasks:

3.1. Designing a detailed study program/research plan (the details were described in 2.1.3.1. part). This can be done by the respective School.

3.2 Acquiring approval from university's board (or other responsible higher management levels) for the designed program/ research. This task can be done by Strategic Management.

3.3 Ensuring the currency of both materials and activities predicted in the designed new program; such as courses, thesis, projects, etc. (Sherry, 2003). Integrity and Unity of Research and Teaching component can be responsible for this task.

3.4 Establishing policies which are identified in the program's design phase and infrastructure for new program/research project by all departments involved (AACSB international, 2007). This can be done by the School.

3.5 Appointing and assigning staff for various tasks and jobs, such as: instructors, teaching assistants, course design team (if applicable), ICT staff for designing and managing the course web page, student support staff, administration staff, and library staff. This task can be HRM component's responsibility.

3.6 Providing essential trainings for faculties and teaching team members, via a systematic instructor training and peer monitoring, which continues through the progression of the program and online courses (Phipps& Merisotis, 2000). HRM component can be responsible for this task.

3.7 Addressing the security and integrity of the information system in the school's technology plan (AACSB International, 2007). This task can be done by ICT unit.

3.8 Providing a system for solving technical problems. This task can be done by ICT component.

3.9 Providing students' qualifications for Admission to the new program. This can be done by the School.

Phase 4: *Promoting the program:*

This phase starts with promoting the program by university's *marketing and sales unit* via templates, brochures, web pages, seminars, etc. In this stage all the essential information about the program for the interested students should be provided, so qualified students would approach the institute. After getting information and preparing necessary forms and documents, they may send their requests to Admission for approval. The role of Student Support Services and Administration is vital in this phase, as they need to provide accurate and clear information, along with advising students about which program best suits their needs.

It is valuable to present some estimated information about the types of careers that graduates from the program can pursue, the amount of salary and income that they can expect, the type of companies who need and hire the graduates from this program, or the higher education fields that graduates can start.

Moreover, as it is shown in the model (*figure 18*), this phase is the first phase for students in *the chain process model*. Therefore, this phase is the starting point for students to become involved in the university's activities and become a part of the academic environment. So firstly, students get information from different resources about university programs, admission requirements, conditions and facilities, etc. After choosing a suitable program, they send their requests and application to Admissions.

One of the main points in this phase, is that the program's expectations must be made clear in advance of enrolment for students whenever possible (AACSB International, 2007).

A good strategy would be to ask someone unfamiliar with the processes and procedures and who does not have information regarding the program, to review the available information in various resources to determine any gaps or problems in the information, before the actual promotion phase starts.

In this phase "*the absence of problems model*" can be used for quality, which means the absence of conflicts, dysfunction, difficulties, and troubles which can be achieved via clear and accurate procedures for getting information and applying for the program. Information should flow smoothly between various components and students, while all questions and concerns need to be addressed.

Tasks:

4.1 Providing complete information about the program with details for potential students and other interested individuals/groups. This task can be done by the university's or school's Marketing and Sales unit.

4.2 Assigning staff to assist students to determine the best program and approach for their studies, by providing guidance and answering questions regarding the program, as well as helping interested candidates with their application and necessary documents and administration and admission procedures. This task is suitable for the Student Support Service division and Administration component (either in the school or in the university level).

Phase 5: *Admissions chooses suitable students:*

In this phase Admissions evaluates students' applications and requests, and chooses the most suitable students for the program. The main job here is to evaluate students' applications and forms based on the program's requirements, along with the university's policies and procedures. After the students are selected and informed of their admission, they can then register via Administration for the program and their first semester.

From students' point of view in *the chain process model* (*figure 18*), this phase is about receiving their admissions from the university, and registering for the program and their first semester.

As the students are an important input for the system, in this phase we can use "*the resource- input model*" for our quality model, and the main indicator would be the quality of student intake.

Tasks*:*

5.1 Assessing and controlling the applications from applicants (*Note*: Task 3.9. provides the necessary means for this task). This task is done by Admissions.

5.2 Setting up a system for receiving complaints regarding admission procedures and selection, assessing them and responding to them promptly and thoroughly. This task can be done by Administration.

Phase 6: *Designing the course:*

This phase could be started simultaneously with *phase 4* and continued during *phase 5*, which means that when various components and units in the university are busy with promoting the program, choosing suitable candidates, and registering new students, the school and the chair/department can also start working on the courses and activities planned in the program, especially, the courses to be presented first semester.

Although designing the course/s can start simultaneously with *phase four (4*), in *the chain process model* this phase has been placed in *phase six (6)* due to the fact that it is necessary to ensure there are enough students willing to start the program and its course/s. This factor would be clear *during phase four (4) and five (5)*. It is a fact that even if university's *strategic management component*, *school*, and *marketing and sales unit* are certain that by designing the new program, they responded properly to the new needs and changes, and after all those studying and analyzing various data and information, there is the demands for a new program in the university, still there is a chance that the campaign for starting a new program (and even well-established existing program) would fail, and the enrollment does not reach the minimum number required by the university's policies and standards.

It is common that some of the courses are, already, offered by the respective chair/department, or possibly the students could take course/s offered by the other chairs/ departments as a part of program's plan and design. So it is possible that at the very beginning of the program designing new courses is not critical, and *phase six (6)* would be a proper position for starting the design of new courses. Also, the courses offered in the first semester/s are typically in the basic levels already offered by the university. The aim for having them in the program is to build the basic knowledge for the courses that should be taken later in the program; such as mathematics, computer studies, statistics, academic writings, etc.

In this phase there are generally four main steps need to be taken for designing a course. The first step is about planning the whole design process by discussing the overall design and identifying the objectives. In this step, the institutional policies and intellectual property issues need to be defined, and having "*a model course*" can be very useful in this step for benchmarking. The second step is to develop the course by finding the course outlines (textbooks, syllabus, graphics, etc.) and identifying the assessments. The third step is uploading the content, proofreading, editing, and testing the course content to be sure that everything works properly. And the last step is to submit the course for approval from the department/chair (Puzziferro & Shelton, 2009). It needs to be mentioned that depending on the university's policies and standards, the third and fourth steps can be switched, meaning that, the third step may be to get the approval before uploading the course content on the university's webpage.

As discussed in the previous section, in designing a course we also need to follow a solid model, such as ISD process or ADDIE. These models basically promote the concept of planning and predicting everything before executing phase. Also, designing a course can be done either by a big team or by the instructor as he/she receives help and advice from other units or components like ICT and library.

Although the design for an online course contains both technology and content elements, there is no single ideal in design, and there can be many forms of ideal. Technology elements are defined as those elements which support learning, and they are the means and mediums to provide teaching-learning environment (Carr‐Chellman & Duchastel, 2000).

There are two approaches for preparing a course in university's website at the end of design process: one is when the instructor/design team gives the whole prepared materials to ICT unit for uploading them into the related sections within the university's website and course page; the other is to create the course web page with various sections, and then the instructor/design team could upload the prepared files, and fill the sections when the actual design is done. The roles and authority of the participants should be defined by ICT within each course page to prevent the confusion or even damaging the course content and data.

It is a common practice to use a Course Management System (CMS) to determine what can be included in the course design and how these components will be set up for student use. The common features of a CMS include a discussion board (in a chat room format for interaction among participants and discussion about course topics and issues and it is like the online classroom), digital drop boxes for assignments, support for video clips, support for library holdings, support for audio conferencing, software for supporting workgroup collaboration, email links, distribution lists, an online grade book, and a place for posting the profiles (biographical information about faculty and students, such as photos, personal information, brief resumes, etc.) (Dykman & Davis, 2008).

In this phase, while the department/ chair is busy preparing the course, students may be getting ready to start the semester after registering for the required course/s for that semester.

Again, in this phase "*the resource- input model*" can be used for quality, as in this phase the resources are the inputs for the course and based on the objectives of the course, the instructor, materials, media, ICT requirements (software, hardware, ICT knowledge, etc.) should be clarified and assigned to the course. Input can be quality of human resources, ICT infrastructure, and other facilities, while the output at the end of this phase, would be a finished designed course on the university's website.

Tasks:

6.1 Providing the basic policies and framework for designing a course and monitoring the process of design (*Note*: the details were described in *2.1.3.3.* part). This task can be done by the School.

6.2 Determining appropriate faculty and staff qualification for delivering the course (Widrick, Mergen, & Grant, 2002) (*Note*: Task 3.5. determines the recruitment criteria, while this task is referring to the specific qualifications needed for designing a course, which means that course designer/s can be assigned from already hired staff or be hired to fill the position/s). This task can be done by the School and HRM.

6.3 Providing information regarding how to use technology and equipment for instructors and design team for designing the course, and providing training for instructors and teaching teams instructing them how to use the website (Sherry, 2003). This task would be done by the ICT component.

6.4 Preparing the basic items (as mentioned in *2.1.3.3.1* part) by the end of this phase: a course syllabus, a study guide, an online grade book, and profiles. This task mainly is done by instructor/design team.

6.5 Assessing and controlling the designed course at the end of the phase for approval. This task can be done by the School.

6.6 Arranging technical production and services for the design and teaching team, and developing the course page in the university's website with essential links to the course materials (Caplan, 2004). This task would be done by the ICT component.

6. 7 Providing the manuals and instruction with details for using, accessing, and navigating university's website and its various tools, applications and pages. This task would be done by the ICT component.

6.8 Determining access to and authority over providing the course content and changing it (Caplan, 2004). This task would be done by the ICT component.

6.9 Providing a list of all disciplinary policies, procedures and guidelines, along with the appropriate authority's approval (prepared and provided by the respective university's divisions or outside institutes /authorities) in the university's website *for students' consideration* (Caplan, 2004). This task can be done by the Administration component.

6.10 Ensuring access to the library and its effective use for instructor/design team. This task can be a part of Resource Management/Library's responsibility.

6.11 Handling copyright clearance, reserve readings, etc. (Puzziferro & Shelton, 2009). This task can be a part of the Resource Management/Library's responsibility.

6.12 Ensuring the currency of prepared materials and designed activities in the course, in that there are assessments, controlling means, and processes in school for this purpose, which will be applied systematically (Sherry, 2003) (*Note*: This task completes the task 3.3. in ensuring the currency of the program design). This is the duty of the Integrity and Unity of Research and Teaching component.

Phase 7: *Course Delivery:*

In this phase the actual teaching-learning environment is created, as students participate in the course activities and start a direct interaction with their instructor and teaching team. The list of tasks for the instructor and teaching team is very long. Also, the ICT has an important role to play in this phase, as most course activities are done via media, while providing, maintaining and managing the whole ICT infrastructure is ICT's responsibility.

The quality model for this phase can be "*the process model*" which is for smooth internal process and fruitful learning experiences, and the indicators can be participants, leadership, course environment, social interaction, learning activities and experiences.

Tasks:

7.1 Checking and confirming the appointments for required faculty members (instructor, teaching assistant, etc.) to deliver the course, as predicted in Phase 3, and applying the criteria for hiring determined in task 3.5, and there was also a task for determining the faculty qualifications in Phase 6/Task 6.2- to be sure that all the positions are filled and there are adequate human resources to deliver the course on time. This task can be done by the HRM component.

7.2 Providing access to minimal technology required by the program or research design (Phipps & Merisotis, 2000). This task can be done by the ICT component.

7.3 Providing written resources for faculty members to deal with issues arising from students' use of electronically accessed data - or other types of misconduct- for preventing any misuse or misunderstanding. This task can be done by the Administration component.

7.4 Ensuring students' access to sufficient library resources (which can include virtual library) (Phipps& Merisotis, 2000), and effective use of library. This task can be done by the Resource Management/ Library.

7.5 Ensuring that the instructor/teaching team has all essential skills for using a PC, knowing about file structure, managing back up files, web browser functions, windows functions, software applications for teaching on web, basic Internet functions, etc. (Caplan, 2004) (*Note*: this is based on the determined guidelines in task 3.6). This task can be done by the ICT component.

7.6. Providing preparation of new students. This task can be done by the Student Service unit.

7.7 Laying out the ground rules by the instructor. The instructor and teaching team need to do this task.

7.8 Ensuring the reliability of the technology delivering system. This is a task for the ICT component.

7.9 Monitoring course activities regarding the use of technology and equipment for teaching-learning for students, personnel, and instructors. This task can be a task for the ICT component.

7.10 Providing the means to resolve students' complaints during the semester (Sherry, 2003). This task can be done by the Student Service unit.

7.11 Creating a high-quality teaching–leaning environment (*Note*: the details are described in 2.1.3.4.1 part). This task can be done by the respective school.

Phase 8: *Finishing the course and finalizing students' grades at the end of the semester:*

This phase usually, starts after the semester and exam period concludes (based on university's calendar and course's time table), when activities are wrapped up and results are finalized. The ideal is to be able to finish all the activities during the delivery phase entirely based on what is written and predicted during the design phase, and achieve the best results, which can be students' satisfaction, high rate of students with high marks, covering all the topics, etc. Nevertheless, achieving this ideal is not easy and usually the instructor and his/her team would need to make changes or compromises during the delivery phase based on the course environment and students' conditions. Also, there are many reasons students may drop out of the course and not finish, or not pass the course, similarly to conventional courses.

It can generally be said that evaluation and assessment is a process of applying values or making judgments in a given situation. Evaluation and assessment in education is the means used in judging the worth or value of something or the lack of it, and the values always are a significant part of the process for evaluation (Verduin & Clark, 1989, p.183) Therefore, the objective is to manage the course assessment successfully and professionally. This phase shows the final result of a long assessment process, which was designed and created during *the course design phase* and implemented during *the delivery phase*. The aim for assessment, also, is to demonstrate the quality and effectiveness of the teaching-learning environment, which helps students to achieve course objectives and goals, and show some evidence that they learned what they were supposed to learn.

As can be seen in *the chain process model (figure 18)* there is a loop between three (3) phases for students: phase 6, 7, and 8, which means that to finish a program, students need to go through the process of registering for one or more courses in each semester, participate in these courses and activities, and at the end of each semester, finish the course/s and pass it/them. So, these three (3) phases would be repeated over and over again during a program, until the program ends, and the students graduate from it.

"*The goal and specification*" quality model can be a suitable model for this phase, to achieve the stated course goals and objectives with the given specifications. The indicators for this phase would be course objectives, specifications, standards, which were listed in the course outline, such as, academic achievements, attendance rate, grades and marks, satisfaction rates.

As, two (2) of the feedback loops, which are parts of introduced *feedback and evaluation* process, are related to this phase (See: *figure 18*), we need to specify the assessment perspectives for our tasks as well. Therefore, in this phase the assessment would be categorized in three (3) categories based on various perspectives in this regard: *School's perspective*, *Instructor's perspective*, and *Student's perspective*.

Tasks:

8.1 Undertaking students' assessments at the end of the semester, finishing the course, and posting the grades and marks on course web page. This is a task for the instructor/teaching team.

8.2 Providing support for the instructor and teaching team for designing and implementing a secure and smooth assessment system (including online test, exams, projects, etc.) for the course. This task can be done by the ICT component.

8.3 Evaluating learning outcomes. This task can be done by the school. This is from the school's perspective.

8.4 Conducting a Student Satisfaction Survey. This can be done by the School. This is from the student's perspective.

8.5 Conducting a survey for drop-out students or students who have registered more than once for the course. This can be done by the school. This is from student's perspective.

8.6 Measuring the efficient use of time in the course. This can be done by the school. This is from instructor's perspective.

8.7 Handling students' plagiarism and other types of delinquency - based on the provided policies and procedures which were introduced and explained to the students via various media and emphasized by the instructor/teaching team during the semester (Scheerens, Luyten, & van Ravens, 2011) (*Note*: a list of policies and regulations were provided in Phase 6/Task 6.9. for the students and the regulations and procedures were presented to the faculty members in Phase

7/Task 7.3.). This can be done by the instructor/ teaching team. This is from the students' perspective.

8.8 Handling students' requests or complaints about their grades and marks, and referring them to the instructor/teaching team within the time period dedicated to this matter. This is from the school's perspective.

8.9 Reviewing the reports from the instructor/ teaching team regarding plagiarism and other types of delinquency to be sure that the policies and required procedures are followed and nobody is excluded. This can be done by the school. This is from the school's perspective.

8.10 Evaluating the faculty and teaching team members at the end of the course based on the surveys, received complaints, and performance reports during the semester. HRM component can be responsible for this task. This is from the school's perspective.

Phase 9*: Evaluating the program:*

This phase stands at the end of a long chain of processes and phases for having a program in an online university. At this point, at the end of *the chain process*, the program's outputs and achievements need to be evaluated to see whether the goals and objectives assigned at the beginning of the chain process, have been accomplished.

It is a fact that good evaluation helps the university to design a realistic development plan, by illustrating which elements and features are effective. Besides, it is important to include all the involved components and parties in the evaluation process. Therefore, evaluation can be done in various forms, as *teacher evaluation, curriculum evaluation, student evaluation, material* *evaluation*, and *organizational evaluation*. Evaluation, also, can provide information for external bodies, such as, funding agencies, legislative bodies, businesses, colleges, etc. (Verduin & Clark, 1991, p.184).

Although, this phase is at the end of *the chain process model* for designing a new program (see *figure 18*), when a program is launched, it would be repeated. Therefore, as explained at the beginning of this section, in modified chain process model, this phase would be directly connected to the first phase (see *figure 19*) and the result of evaluation phase would improve the program, and it is essential to make changes based on the result of evaluation phase.

In this regard, also, it is important to investigate those who have dropped out of a course, to determine whether students had to take other courses before certain courses, and why some of the students did not follow the sequences. And we need to examine the instructors' reports about changing the course content or their complaints regarding the course sequences as well.

In this phase, the students have graduated from the program and have started a career in the business or academic world, or they may have started another academic program/research project. The data and information about their achievements and success is a parameter for university's outcome. There may also be students struggling with finding a suitable job or a desirable higher academic program, and this information is also important, as it shows the weaknesses in the university's management in analyzing and interpreting the data and information regarding new needs and changes in business or academic world. Therefore, by having real data and information regarding the real outcomes and impacts of the program, we can update the program's aim and objectives and make essential changes in the program and plan for better results. Therefore, it is one of the reasons why the university asks graduates to be a part of

Alumni and have contact with them, to use their information for program's evaluation or other development plans.

This phase can be at the end of a chain process for defining, designing, and conducting a research project, and we can have the indicators for evaluating the research projects as well.

Therefore, the model for quality for inside stakeholders would be "*the goal and specification model*" which is about achievements of stated institutional goals and aims conformance to given specifications. The indicators would be Institutional objectives, specifications, and standards listed in the program plans, e.g. academic achievements, dropout rates, attendance rate, etc.

From the outside stakeholder's perspective (which now includes graduates from the program too) "*the legitimacy model*" for quality can be used, as a part of competition with other institutions and responding to other demands from various stakeholders. Although, in the first phase, we considered the same quality model, in this phase it is important to investigate how each program within the university contributes to building this legitimacy model, and what are its outcomes and impacts from outside stakeholders' point of view. The indicators can be public relations, marketing, public image, reputation, status in the community, evidence of accountability, etc.

Again, two (2) of the feedback loops, which are parts of *feedback and evaluation* process, are related to this phase (see: *figure 18*), and we need to specify various perspectives of the evaluation system for our tasks as well. Therefore, in this phase the program evaluation tasks would be categorized in three (3) categories based on various perspectives in this regard: *the school's perspective*, *the student's perspective*, and the perspective of *other stakeholders'*.

Tasks:

9.1 Establishing an evaluation system of processes and means to assess and evaluate the university's program regularly (Sherry, 2003). This can be done by Strategic Management. This is from the school's perspective.

9.2 Evaluating the strategic plan (Asif & Raouf, 2013). This task can be done by Strategic Management. This is from the school's perspectives.

9. 3. Evaluating support services (Asif & Raouf, 2013). This task can be done by Strategic Management. This is from the stakeholders' perspectives.

9.4 Evaluating the ICT security and ICT strategy plan. This can be done by ICT component.

9.5 Providing the results of the evaluation process to the authorities and respective individuals/ divisions for follow up and undertaking the required changes by publishing the results via appropriate media. This task connects this phase to the first phase directly, as described in the discussion regarding the modified model (See *figure 19*). This will be done by Strategic Management.

2.2.3.4.2. The chain process model and its indicators in one glance. Table 11 shows a summary of the basic indicators in each phase for the chain process model. The main concept presented in this table is that in each phase we need at least one guideline for doing the main tasks properly, which is a *Guideline* indicator. Another related indicator would be presented as the process controlling, which makes us sure that the task is done based on what was indicated in the assigned guideline. Clearly the guideline would be presented in the different form of policies, standards, procedures, etc.

Table 11

The chain process model and the indicators in one glance

Collecting Data from Various Stakeholders	Guidelines for • collecting data • process controlling (data collection) • processing data • process controlling (data processing)
Defining the Program	Guidelines for • the program-defining process • process controlling
Designing the program	Guidelines for • the program-designing process • process controlling
Promoting the Program	Guidelines for • the program-promoting process • process controlling
Choosing the suitable Students	Guidelines for • the admission process • process controlling
Designing the Course/s	Guidelines for • the designing process • process controlling

Course Delivery	Guidelines for • the delivery process • process controlling
Finishing Course and Finalizing the Grades	Guidelines for • the assessment process • process controlling
Evaluating the Program	Guidelines for • the evaluation process • process controlling • processing data • distributing/ publishing results

2.2.3.4.3. The indictor Table. After presenting the main phases and tasks for *the chain process model* in previous part, in this part the defined indicators for the assigned tasks are presented in a table with complete details regarding their definitions and the relationships between them. In a few cases these details are presented in a separate table to make *the indicator table* more comprehensive. The main measurement table, as an interactive table, is presented in an excel file, which reflects how these tasks and their associated indicators can be regarded and rated as a part of a quality management system- discussed in detail in previous parts- and this table is accessible as *Appendix 5*.

Moreover, the aim here is to define and examine as many indicators as possible from which the institutions may select and adopt the most suitable for their needs, and these defined indicators can be considered merely as examples. Especially given the fact that small institutes do not have sufficient resources to cover all the defined indicators presented here. Therefore, the most appropriate ones need to be chosen based on the needs of each institute.

Phase	Task	Quality Assurance	Quality Control	Quality Assessment
1	1.1	Collecting data from various stakeholders, such as employers, alumni, graduates, funders, the labor market, faculty, the administration, government, policy makers, parents, the community, professional and accreditation bodies, etc. This task can be managed by Strategic Management component.		
		1.1. AR. 1. A copy of guidelines including policies, procedures, forms and checklists for collecting data from stakeholders is available, which states: the information that is needed, providers of the information, methods and instruments for gathering the data, intervals for gathering the data, responsibilities with regard to these processes, rules concerning processing, distributing and sorting the data, personal safety, and data protection.	1.1. CT. 1. Required data is collected properly and based on guidelines' specifications while the procedures are followed completely.	1.1. AS.1.The guidelines proved to be useful by having a steady strategic plan and successful programs and the collected data are relevant and reliable. *Note:* In Phase 9 the evaluation will take place.
2	2.1	Preparing the detailed information sheets about the new program or new research project by specifying the educational objectives for the program/research and explaining how the program/research emerges from and contributes to the mission, goals and objectives of the university (AACSB International, 2007). This can be done by the respective School which is going to execute the new program.		

		2.1. AR. 2. A copy of documents, which includes procedures, forms and charts for acquiring the required approvals for the new program/research, is available and ready to follow. *Note:* The details of needed information are presented in *Discussion 2.1* section.	2.1. CT. 2. All the procedures and charts are followed to obtain the required approvals, and a detailed report about the new program/research and its objectives is developed and presented to the university's management for approval.	2.1. AS.2.The required documents for approval (including forms and charts) provide sufficient information and evidence for management to make the right decision regarding the new program.
		2.1. AR. 3. Guidelines for formulating and estimating the capacity and qualifications for faculty to design courses for the new program is available. These guidelines should include the methods of calculation and formulas.		
	2.2	Examining the suggested program/research plan for deciding whether to implement it or not. This can be done by the Strategic Management component.		
		2.2. AR. 4. A guideline including the procedures and checklists for examining the plan is available (determined by the guidelines provided for preparing the information sheet for the new program).	2.2. CT. 3. Checking the completeness of the information material.	2.2. AS.3. The information base provided was useful, as all the essential information genuinely and accurately can be provided by conducting the guidelines.
			2.2. CT. 4. All "ad hoc" questions are clarified.	2.2. AS.4.A clear decision is made.

3	3.1	Designing a detailed study program/research plan (the details were described in *2.1.3.1.* part). This can be done by the school.		
		3.1. AR. 5. Guidelines for formulating a detailed and clear plan for launching the study program/research to the candidates based on the available resources is accessible. *Note:* The guidelines particularly should include the methods and formulas that calculate and show clearly and precisely both the required and available resources, for the new program.	3.1. CT. 5. All the resources are available, and the plan is prepared based on the university's policies and procedures. For research, the percentage of budget allocated to the research (Asif & Searcy, 2014), along with existing a plan for providing it and securing the payments is determined.	3.1. AS.5.The guidelines and procedures are adequate and suitable for formulating a detailed plan to be used for offering the program. *Note*: This detailed plan must be adequate to be used for getting board's approval- in *Task 3.2* - and providing information for interested candidates – in *Task 4.1*.
			3.1. CT. 6. Appropriate faculty qualifications for designing courses for this new program are determined (Widrick, Mergen, & Grant, 2002).	3.1. AS.6.The guidelines are adequate for estimating the capacity and qualifications for the required faculty for designing the new program.
			3.1. CT. 7. Estimation and calculation are carried out correctly and they are proved.	
			3.1. CT. 8. All points of the guidelines are carried out precisely and all steps are checked.	
	3.2	Acquiring approval from university's board (or other responsible higher management levels) for the designed program/ research. This task can be done by Strategic Management.		

		3.2. AR. 6. The guidelines are provided, which indicated the procedures for acquiring approvals, what kind of approvals is needed, and who has the authority to provide the approvals.	3.2. CT. 9. All the necessary approvals, based on university's guidelines, are acquired.	
	3.3	Ensuring the currency of both materials and activities predicted in the designed new program; such as courses, thesis, projects, etc. (Sherry, 2003). Integrity and unity of research and teaching component can be responsible for this task.		
		3.3. AR. 7. A copy of policies and procedures for defining and evaluating the currency of the materials and activities in the designing the program/research and its courses is accessible.	3.3. CT. 10. The policies and procedures are regarded and implemented.	3.3. AS.7.The policies and procedure can ensure the currency of the program/research /course design.
	3.4	Establishing policies which are identified in the program design phase and infrastructure for new program/research project by all departments involved (AACSB international, 2007). This can be done by the School.		
		3.4. AR. 8. Guidelines for establishing new infrastructure for the new program are prepared.	3.4. CT. 11. Infrastructures according to the new guidelines needed for the new program are established.	3.4. AS.8.The guidelines prepared for the new program are useful and serve the purpose of establishing a new infrastructure.
	3.5	Appointing and assigning staff for various tasks and jobs as Instructors, Teaching assistances, Course design team (if applicable), ICT staff for designing and managing the course web page, Student support staff, administration staff, and library staff. This task can be HRM component's responsibility.		
		3.5. AR. 9. Criteria for recruitment are provided (Sherry, 2003).	3.5. CT. 12. Staff and personnel are hired according to university's criteria -both university's general criteria and	3.5. AS.9.Criteria for recruitment are sound and compatible with the required standards and policies by both inside

			specific determined criteria for the program.	and outside respective parties.
				3.5. AS.10.Existing guidelines assure that the hired personnel fit the assigned tasks.
	3.6	Providing essential trainings for faculties and teaching team members, via a systematic instructor training and peer monitoring, which continues through the progression of the program and online courses (Phipps& Merisotis, 2000). HRM component can be responsible for this task.		
		3.6. AR. 10. The guidelines for systematic instructor's training and monitoring are provided by HRM, along with training manuals and schedules.	3.6. CT. 13. The trainings are provided by various divisions (such as, ICT, administration, library, etc.) for instructors and other members of teaching/research team, as the mandatory trainings either online or face-to-face.	3.6. AS.11. The mandatory trainings provide required qualifications for the faculty and teaching team, and they are able to fill the gap between teaching team's experiences/skills/ knowledge and required qualifications.
			3.6. CT. 14. The trainings provided by the guidelines are undertaken.	
	3.7	Addressing the security and integrity of the information system in the school's technology plan (AACSB International, 2007). This task can be done by ICT unit.		
		3.7. AR. 11. A copy of guidelines and policies for ICT security and its integrity is available.	3.7. CT. 15. ICT division is following the security standards and policies.	3.7. AS.12.The guidelines are appropriate and sufficient for ensuring the ICT security.
	3.8	Providing a system for solving technical problems. This task can be done by ICT component.		

		3.8. AR. 12. A system of sending notifications regarding technical problems and solving them is available.	3.8. CT. 16. The system of sending notifications regarding technical problems is abided.	3.8. AS.13.System of sending notifications regarding technical problems works smoothly.
	3.9	Providing students' qualifications for admission to the new program. This can be done by the School.		
		3. 9. AR. 13. A copy of guidelines for general qualifications for students is available.		3.9. AS.14.The guidelines are suitable for ensuring the best candidates are chosen for the program.
		3.9. AR. 14. New policies and procedures for ensuring the integrity of students' work, credit, and degrees in the new program are designed and accessible (Sherry, 2003), which are the comprehensive guidelines, as an extended version of the university's general guidelines in this regard.		
4	4.1	Providing complete information about the program with details for potential students and other interested individuals/groups. This task can be done by the university's or school's Marketing and Sales unit.		
		4.1. AR. 15. The guidelines that determine which information and in which format should be presented to the interested potential candidates, is available.	4.1. CT. 17. All the essential information exists on different media for promoting the program. *Note:* the interested groups/individuals/stakeholders can have access to all of them, and nothing is vague or ambiguous about the program. The	4.1. AS.15.The interested group finds the presented information sufficient and useful.

			information in University's website, brochures, etc. is accurate and up-to-date, while the links to essential information and contacts in university's website are working properly. The means of communication and information about contacting the University for getting help are promptly ready and properly promoted.	
	4.2	Assigning staff to assist students to determine the best program and approach for their studies, by providing guidance and answering questions regarding the program, as well as helping interested candidates with their applications and necessary documents, and administration and admission procedures. This task is suitable for the Student Support Service division and Administration component (either in the school or in the university level).		
		4.2. AR. 16. The criteria for assigning required staff and determining assignment procedures for promoting the program are defined and available. *Note:* The personnel should be familiar with all the details about the program and applying procedures accurately or at least they need to know how to find all the essential details when they are asked, while this can be done by assigning different personnel for each school or each program.	4.2. CT. 18. There are enough personnel available to help and guide interested individuals/stakeholders.	4.2. AS.16.The interested candidates are satisfied with the provided assistance by the assigned staff.

		This task can be addressed by having a 24/7 portal or contact services for students via website, telephone, chat, email, etc.		
5	5.1	Assessing and controlling the applications from applicants (*Note*: Task 3.9. provides the necessary means for this task). This task is done by Admissions.		
		5.1. AR. 17. Admission guidelines are defined, and the responsible personnel is well informed about the admission procedures to follow.	5.1. CT. 19. Admission process follows the fixed steps and rules.	5.1. AS.17.The admission process shows no severe problems (e.g. delayed decisions, unclear conditions).
	5.2	Setting up a system for receiving complaints regarding admission procedures and selection, assessing them and responding to them promptly and thoroughly. This task can be done by Administration.		
		5.2. AR. 18. Guidelines are provided for how to handle complaints.	5.2. CT. 20. The guidelines for receiving and handling the complaints are followed by Administration.	5.2. AS.18.The system for submitting complaints regarding admission, either the process or personnel, and receiving responses is available and works properly.
6	6.1	Providing the basic policies and framework for designing a course and monitoring the process of design (*Note*: the details were described in *2.1.3.3*. part). This task can be done by the School.		
		6.1. AR. 19. A copy of guidelines, regarding minimum standards for course development /design is available (Phipps, & Merisotis, 2000).	6.1. CT. 21. School and instructor/design team follow the policies, frameworks, and standards for designing the course.	6.1. AS.19.The guidelines prove to be helpful with sufficient details and the designer/s have no problem following and implementing them.

				6.1. AS.20.The course is well designed.
	6.2	Determining appropriate faculty and staff qualification for delivering each specific course (Widrick, Mergen, & Grant, 2002) (*Note*: Task 3.5. determines the recruitment criteria, while this task is referring to the specific qualifications needed for designing a course, which means that course designer/s can be assigned from already hired staff or be hired to fill the position/s). This task can be done by the School and HRM.		
		6.2. AR. 20. A copy of guideline for faculty and staff qualifications for teaching in the program is available. *Note*: this qualification are determined based on what was predicted in Task 3.1.for designing the course.	6.2. CT. 22. The guidelines are followed by School and HRM.	6.2. AS.21. The guidelines prove to be helpful and sufficiently detailed, while the procedures for hiring are easy to follow and the required staff are hired with no complications or troubles.
		6.2. AR. 21. A supplementary guideline is developed for determining appropriate qualifications for teaching and managing the course, as, each course may need specific qualification which can require more than general qualifications for instructors/teaching team according to the university's policies and standards. *Note*: For example, if the course requires laboratory experiments, surly the instructor/teaching team should have the experience and essential	6.2. CT. 23. All the required positions for teaching a course are filled and there is no vacant position to delay the required tasks.	6.2. AS.22.The hired staff show the adequate qualifications.

		qualifications for undertaking the course, so this specific qualification should be added to the general faculty qualification requirements.		
	6.3	Providing information regarding how to use technology and equipment for instructors and design team for designing the course, and providing training for instructors and teaching teams, instructing them how to use the website (Sherry, 2003). This task would be done by the ICT component.		
		6.3. AR. 22. Information sheets and training are available and offered.	6.3. CT. 24. The essential information and trainings are used adequately.	6.3. AS.23.Technology and equipment are used adequately.
	6.4	Preparing the basic items (as mentioned *2.1.3.3.1* part) by the end of this phase: a course syllabus, a study guide, an online grade book, and profiles. This task mainly is done by instructor/design team.		
		6.4. AR. 23. Guidelines for determining how to prepare a course syllabus, a study guide, an online grade book, and profiles are provided.	6.4. CT. 25. The basic items for the course are ready at the end of the phase.	6.4. AS.24.The guidelines prove to be helpful and sufficiently detailed, and the design team has no problem following and implementing them.
			6.4. CT. 26. The guidelines are followed by instructor/design team. *Note*: A checklist for controlling the provided material is presented in *table 12.*	6.4. AS.25.The designed materials comply with the guidelines and any formalities.
	6.5	Assessing and controlling the designed course at the end of the phase for approval. This task can be done by the School.		
		6.5. AR. 24. Criteria for assessing and controlling the course are provided. *Note*: it	6.5. CT. 27. The determined criteria are	6.5. AS.26.Approvals are obtained based on university's policies and procedures, which

		can be in the form of a checklist extracted from guidelines in Task 6.1 and 6.4.	checked and put into practice.	include a broad peer review process, along with existence of all the essential elements for a course predicted in university's standards for designing a course (Phipps, & Merisotis, 2000).
				6.5. AS.27.The guidelines are effective and sufficient.
	6.6	Arranging technical production and services for the design and teaching team, and developing the course page in the university's website with essential links to the course materials (Caplan, 2004). This task would be done by the ICT component.		
		6.6. AR. 25. Guidelines and standards concerning the developing the course website are provided. *Note*: They specify the details regarding how to manage the course webpage, such as, loading course content, designing course graphics and banner, finding learning objectives, working on feel and look of course, loading exam and quiz questions, helping the instructor or other developers to record audio/video, helping the instructor and other developers to be sure that the technologies used in the course are	6.6. CT. 28. Technical assistance service are prepared and presented by ICT, and faculties are encouraged to use this service (Phipps & Merisotis, 2000).	6.6. AS.28.The guidelines are providing adequate information and are easy to follow for the design team and the assistance from ICT division is provided for the teaching team.

		appropriate, and at the end testing the course link and proofreading (Puzziferro & Shelton, 2009).		
			6.6. CT. 29. The course web page is ready before starting the semester, and all the essential items (syllabus, study guide, professor's complete profile, course materials, etc.) are uploaded in the course page and students can have access to them or download necessary files without any technical problem (Mandernach, Donnelli, Dailey, & Schulte, 2005).	
	6. 7	Providing the manuals and instruction with details for using, accessing, and navigating university's website and its various tools, applications and pages. This task would be done by the ICT component.		
		6.7. AR. 26. There are guidelines concerning which essential information should be presented to the students, and how to do that (via brochures, pamphlets, websites, etc.). *Note*: The main information provided by the guidelines includes: information regarding the university's website, course pages, how to navigate them successfully, student log-in and password	6.7. CT. 30. The respective personnel followed the guidelines in the right way and prepared all the information by the book.	6.7. AS.29. The descriptive detailed manuals and instructions (Simonson, Smaldino, Albright, & Zvacek, 2000, as cited in Simonson & Bauck, 2003), with clear and simple instructions (Hughes, 2004) are updated and available in various forms (brochures, pamphlets, files in university's web site, etc.) for all the students, while students use the supply and are

		information for the course, library, student support and service, administration, along with providing procedures, rules, and help for using the interactive tools, while, the instructions are clear and understandable, and well written without any spelling or grammar mistakes (Caplan, 2004). Also providing access to technical assistance for the students, which is detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course and convenient access to technical support staff (Phipps& Merisotis, 2000).		satisfied by the information given, have no problem with the manuals and can use the online learning platforms easily.
		6.7. AR. 27. The manuals for determining how to use university's online learning platforms are developed and published.	6.7. CT. 31. This information is presented in orientation session and assistance exists during the semester and students can easily have access to them.	
			6.7. CT. 32. All the students, especially new students, are informed adequately and on time about this necessary information, and have no problem with log-in to the university's website,	

			and have access to course webpage at the end of this phase.	
	6.8	Determining access to and authority over providing the course content and changing it (Caplan, 2004). This task would be done by the ICT component.		
		6.8. AR. 28. A copy of guidelines from ICT are available, which ICT determines the access and authority over the course content changes and access to the information, following the existing detailed manual, while testing the system by examining it various essential features. *Note*: Points such as, implementing the course calendar by determining the specific time period that the students will be able to upload their assignments and participate in the forum discussion, ensuring that the students can see their own grades in the grade book page as the course advances (maintaining the privacy is the key here), ensuring that the students are able to download the course materials (texts, videos, audios, etc.), and so on. Also, an important point is to resolve that the instructor and other teaching team members	6.8. CT. 33. The ICT system is tested by examining its various essential features. *Note*: For instance, determining whether the students are able to upload their assignments and participate in the forum discussion in the specific time period, to see their own grades in the grade book page (maintaining the privacy is the key here), to download the course materials (texts, videos, audios, etc.), and so on. Also, for instructor and the teaching team whether they are able to make essential changes in the course page or not.	6.8. AS.30.The guidelines are useful and the defined authorization over the course content is precise for ensuring the smooth flow of information and implementing the defined tasks for the staff and personnel.

		can have access and authority over making changes in different sections and parts of the course web page.		
	6.9	Providing a list of all disciplinary policies, procedures and guidelines, along with appropriate authority's approval (prepared and provided by respective university's divisions or outside institutes/authorities) in the university's website *for students' consideration* (Caplan, 2004). This task can be done by the Administration component.		
		6.9. AR. 29. These elements are available in university's webpage for students' consideration, and it is easy to find and have access to them (Caplan, 2004). *Note*: The list includes the items such as, a document about policies regarding plagiarism which defines the act and determines the consequences, along with a document for procedures which explains the necessary actions and steps must be taken regarding plagiarism, and defines the authorized personnel for taking actions and deal with the situation.	6.9. CT. 34. The list is being checked for providing the essential and relevant items and the students have access to them.	6.9. AS.31.The policies are legally sound and there will not be any legal consequences by implementing them.
			6.9. CT. 35. The policies and guidelines are reviewed by a legal team (either inside or outside the university) to avoid any legal problem. *Note*: Although, all the	6.9. AS.32.The guidelines are adequate and the procedures are comprehensible and easy to follow.

			guidelines need to be legally sound, as these particular guidelines are very sensitive, it is vital to specifically check them legally.	
	6.10	Ensuring access to the library and its effective use for instructor/design team. This task can be a part of the Resource Management/Library's responsibility.		
		6.10. AR. 30. There are guidelines for managing and expanding the library or other university's intellectual properties.	6.10. CT. 36. The guidelines are implemented and followed precisely and thoroughly. *Note*: There are adequate information regarding using library (such as, the location, borrowing rules, etc.), along with library training and promotion for faculties (Phipps & Merisotis, 2000).	6.10. AS.33. The guidelines are providing adequate and useful information for having effective library services.
	6.11	Handling copyright clearance, reserve readings, etc. (Puzziferro & Shelton, 2009). This task can be a part of the Resource Management/Library's responsibility.		
		6.11. AR. 31. There are guidelines for specifying the procedures for copyright clearance of the course materials.	6.11. CT. 37. The guidelines for handling the copyright clearance are followed and implemented correctly and accurately.	6.11. AS.34.The needed copyright clearances are identified and handled for the course materials, while there is no copyright incident regarding the course materials (which means that the guidelines are effective and adequate).
	6.12	Ensuring the currency of the prepared materials and designed activities in the course, in that there are assessments, controlling means and processes in School for this purpose which will be applied systematically (Sherry, 2003) (*Note*: This task completes the task 3.3. in ensuring the currency of the program design).		

		This is the duty of the Integrity and Unity of Research and Teaching component.		
		6.12. AR. 32. The course designer (either the instructor or a team) has access to a copy of guidelines, including policies and standards, for indicating the criteria for assessing and ensuring the currency of course materials and activities.	6.12. CT. 38. The guidelines and procedures are followed by the instructor/design team.	6.12. AS.35. The guidelines are adequate and suitable for ensuring the currency of the course materials.
7	7.1	Checking and confirming the appointments for required faculty members' positions (instructor, teaching assistant, etc.) to deliver the course - as predicted in Phase 3, and applying the criteria for hiring determined in task 3.5, and there was also a task for determining the faculty qualifications in Phase 6/Task 6.2- to be sure that all the positions are filled and there are adequate human resources to deliver the course on time. This task can be done by the HRM component.		
			7.1. CT. 39. The instructor and other teaching team members are assigned and ready to start the course.	7.1. AS.36. The predicted qualifications and criteria for faculty members are adequate and suitable for the required positions and nothing is missing.
				7.1. AS.37.The guidelines and criteria for hiring are adequate and sound, all needed personnel are hired on time, and the process was smooth with no problem.
	7.2	Providing access to minimal technology required by the program or research design (Phipps & Merisotis, 2000). This task can be done by the ICT component.		

			7.2. CT. 40. The design team informed the ICT unit for minimal technology predicted in the course and it is available at the beginning of the semester. *Note*: Every course requires certain technology to be delivered, while providing the technology for an online course is expensive. So, at least the minimal technology should be provided and not the latest version of a required technology and media but a functioning one, which is sufficient for delivering the course.		
	7.3	Providing written resources *for faculty members* to deal with issues arising from students' use of electronically accessed data -or other types of misconduct- for preventing any misuse or misunderstanding. This task can be done by the Administration component.			
		7.3. AR. 33. A copy of administrative regulations is provided for faculty members. *Note*: Regulations such as, guidelines on plagiarism, privacy, academic appeal procedures, library facilities, and access to counseling and advisory services exist, and everybody has access to it (Caplan, 2004).	7.3. CT. 41. Faculty members are informed, have access to these materials and know the assigned personnel.	7.3. AS.38.Faculty members and other teaching team members are familiar with the regulations and procedures, and can understand and follow them easily and precisely.	

	7.4	Ensuring students’ access to sufficient library resources (which can include virtual library) (Phipps& Merisotis, 2000), and effective use of library. This task can be done by the Resource Management/ Library.		
		7.4. AR. 34. The guidelines for providing access to the library for students are available.	7.4. CT. 42. The guidelines for having access to sufficient library resources are implemented correctly and properly.	7.4. AS.39.The guidelines provide adequate information and guidance to have a suitable and useful library which can meet students’ needs based on course requirements. *Note*: The result is a well-designed online library, which has these elements and characteristics: The library page can be easily found among other institutional Web pages, The library have an up-front tutorial for the new learners or other users, The library is integrated with the institution’s online courses, The library has tools to assist with online researches, The library provides access to personal assistance (Hughes, 2004).
	7.5	Ensuring that the instructor/teaching team has all essential skills for using a PC, knowing about file structure, managing back up files, web browser functions, windows functions, software applications for teaching on web, basic Internet functions, etc. (Caplan, 2004) (*Note*: this is based on the determined guidelines in task 3.6). This task can be done by the ICT component.		
			7.5. CT. 43. Instructor/teaching team participated in training assigned by the	7.5. AS.40.The needed skills are acquired based on the provided guidelines.

			university or has the proof for having the necessary qualifications.	
	7.6.	Providing preparation of new students. This task can be done by the Student Service unit.		
		7.6. AR. 35. The guidelines for arranging an orientation session at the beginning of the semester, including the necessary information and the way to present them are available.	7.6. CT. 44. There is at least one orientation session (first meeting), or a Welcome Announcement (Mandernach, et.al, 2005) which can be a welcome video or a face-to-face session. *Note*: This either online or face-to-face session is for introducing students to the distance learning environment, while, it is planned carefully during the design phase and all the vital information are presented to the students (Curry, 2003).	7.6. AS.41.Students use the supply and are satisfied by the information given.
				7.6. AS.42.The instructions and information specified in the guidelines to be presented to the students in orientation session was useful and adequate, and students received all the essential information for starting the course.
	7.7	Laying out the ground rules by the instructor. The instructor and teaching team need to do this task.		
		7.7. AR. 36. The guidelines for general	7.7. CT. 45. Students are given essential	7.7. AS.43.The guidelines are effective

		rules for students (such as, how long they can stay in the program, or how many times they can take the course, the dates for exams and tests, the duration of the semester, grading system, grading policies, etc.) is available.	information about studying in online environment. *Note*: The information includes welcoming students, "icebreaker" activities, text announcement, and covering any "housekeeping items". Also, there is an introduction to the course structure, style, learning experience, technology requirement, available support resources, course policies, general expectations, introducing the instructor (Puzziferro & Shelton, 2009).	for helping the instructors to cover all the essential rules, and following these guidelines leads to the expected results.
		7.7. AR. 37. There are guidelines for instructor to determine how to define their own specific rules for the course (such as time periods to do the assignments, rules for participating in forums or online sessions, rules for late submissions, etc.) and publish them. *Note*: One way to publish the ground rule is to include the rules in syllabus and make sure that the students read it and are aware of it. Then the instructor needs to stick with them. (Anderson, 2008); rules such as: expectations, the dated		7.7. AS.44.There is no conflict between general examination rules and instructor's rules.

		for assignments, the formats for assignments and essays, which activities are mandatories, the penalties for late attendance or assignments, etc. Also, faculty and students agree upon expectations regarding times for students' assignment completion and faculty response, and other exception like sickness, urgent family matters, traveling, and problem with accessing the university's website or the Internet (Phipps & Merisotis, 2000).		
	7.8	Ensuring the reliability of the technology delivering system. This is a task for the ICT component.		
		7.8. AR. 38. There are guidelines for providing a reliable system for university's technology system.	7.8. CT. 46. ICT follows the guidelines for providing a reliable and secure ICT system.	7.8. AS.45.Following the guidelines can ensure the reliability of the ICT system.
				7.8. AS.46.The number of the times that in a semester webpage/email system wasn't available is considered and calculated (Phipps& Merisotis, 2000).
	7.9	Monitoring course activities regarding the use of technology and equipment for teaching-learning for: students, personnel, and instructors. This task can be a task for the ICT component.		

		7.9. AR. 39. The guidelines for determining the suitable factors and features for monitoring the course activities are provided. *Note*: As an example, table 13 shows a checklist for these points.	7.9. CT. 47. The guidelines are used and implemented adequately and effectively.	7.9. AS.47.The guidelines provide adequate means and a proper system for monitoring the course activities regarding the use of technology and teaching-learning equipment.
	7.10	Providing the means to resolve students' complaints during the semester (Sherry, 2003). This task can be done by the Student Service unit.		
		7.10. AR. 40. Guidelines are available which indicate the policies and procedures for resolving students' complaints or referring them to the respective authorities.	7.10. CT. 48. The guidelines are followed adequately and effectively.	7.10. AS.48.The guidelines are adequate and suitable for managing the received complaints professionally, while they are easy to follow and be carried out.
	7.11	Creating a high-quality teaching–leaning environment (*Note*: the details are described in *2.1.3.4.1* part). This task can be done by the respective School.		
		7.11. AR. 41. Principles for teaching and managing an online course are provided for the instructor and the teaching team.	7.11. CT. 49. Monitoring the advancement of the course during the semester and checking the instructor/teaching team activities, and students' progress and participation, while checking that course activities are conducted based on course schedule and plan. *Note*: A checklist for this indicator is presented in table 14.	7.11. AS.49.The course demonstrates high quality environment which displays that the declared principles are adequate and easy to understand and follow.

8	8.1	Undertaking students' assessments at the end of the semester, finishing the course, and posting the grades and marks on course web page. This is a task for the instructor/teaching team.		
		8.1. AR. 42. A copy of guidelines for students' assessment and finishing activities for the course is available.	8.1. CT. 50. All the forms related to students' assessment and activities for finishing the course are filled and posted to related authorities or uploaded into the proper databases.	8.1. AS.50. The assessment is carried out smoothly without any problem which demonstrate that the guidelines and procedures are adequate for students' assessment, and they are easy to understand and follow.
			8.1. CT. 51. Students' grades are posted on time and accurately. *Note*: The grades and marks are available for students on course page and privacy measures are taken (each student only can see his/her own grades), and the webpage would be updated promptly regarding changes done by the instructor or other authorities.	
	8.2	Providing support for the instructor and teaching team for designing and implementing a secure and smooth assessment system (including online test, exams, projects, etc.) for the course. This task can be done by the ICT component.		

		8.2. AR. 43. The guidelines and standards for implementing a secure and smooth assessment based on the latest standards for an online course assessment for the students in the course is provided. *Note*: In task *8.1*.the guidelines for students' assessment were provided, and here there are guidelines for ICT specifically, as the security of the student's assessment is an important issue to be considered.	8.2. CT. 52. The established assessment system is based on the guidelines.	8.2. AS.51.The guidelines proved to be adequate, and useful and the system is working smoothly
	8.3	Evaluating learning outcomes. This task can be done by the School. This is from the School's perspective.		
		8.3. AR. 44. The guidelines for course's learning outcomes is provided. *Note*: For instance, students' scores, grades, etc. should be within a defined standard margin, and if, for example, all the students in one course failed, there is a big problem and school needs to investigate it, but when the scores and grades are within the defined standard range (for example, 5% As, 75& Bs and10% Cs and 5% Ds and 5% Fs) school accepts it and	8.3. CT. 53. The assessment procedures follow the regulations.	8.3. AS.52.Students' scores and grades, student completion rates, retention, drop-out rate are acceptable based the university's achievement standards (Moore & Kearsley, 2012).

		there is no need to investigate.		
		8.3. AR. 45. Regulations, rules, and standards for embracing and evaluating students' learning results are developed in the form of guidelines.		
	8.4	Conducting a *Student Satisfaction Survey*. This can be done by the School. This is from the student's perspective.		
		8.4. AR. 46. Instruments and procedures for gathering data about students' satisfaction are developed. *Note*: *table 15* presents a sample of the main items in the student's questionnaire.	8.4. CT. 54. Instruments and procedures are used correctly and properly.	8.4. AS.53.The designed survey provides useful and formulated information regarding students' evaluation of the course.
				8.4. AS.54.The median calculation of the course by students (Asif & Searcy, 2014), and students' survey scores (e.g. responsive and non-responsive data) are within accepted rate based on university's standards.
				8.4. AS.55.The students are satisfied with the course.
	8.5	Conducting a survey for drop-out students or students who have registered more than once for the course. This can be done by the School. This is from student's perspective.		

		8.5. AR. 47. A student survey for drop-outs based on the university's needs and policies is designed. *Note*: A sample for main items in this questionnaire is presented in *table 16.*	8.5. CT. 55. Instruments and procedures for conducting a survey for drop-outs are used correctly and precisely.	8.5. AS.56.The designed survey for drop-outs provides useful and formulated information regarding students' evaluation of the course.
				8.5. AS.57.The median calculation of the course by drop-out students (Asif & Searcy, 2014), and drop-out students' survey scores are within accepted rate based on university's standards.
	8.6	Measuring the efficient use of time in the course. This can be done by the School. This is from instructor's perspective.		
		8.6. AR. 48. The guidelines and forms for preparing a report regarding measuring efficient use of time in the course is provided for the instructor /the teaching team. *Note*: *Table 17* shows a few examples of the indicators for measuring the efficiency of the use of time in the course.	8.6. CT. 56. The reports are completed by the instructor/teaching team and sent to the school on time.	8.6. AS.58.The guidelines are efficient and the instructor/teaching team can follow the procedures and filling the forms easily.
	8.7	Handling students' plagiarism and other types of delinquency - based on the provided policies and procedures which were introduced and explained to the students via various media and emphasized by the instructor/teaching team during the semester (Scheerens, Luyten, & van Ravens, 2011) (*Note*: a list of policies and regulations were provided in Phase 6/Task 6.9. for the students and the regulations and procedures were presented to the faculty members in Phase 7/Task 7.3.). This can be done by the instructor/ teaching team. This is from the students' perspective.		

		8.7. AR. 49. The guidelines are provided for determining how to make the report and what information is needed to be reported.	8.7. CT. 57. Students' plagiarism and other types of delinquency are handled based on universities policies, and the prepared reports are sent to the administration and school (or any other authority mentioned in the university's guideline).	
	8.8	Handling students' requests or complaints about their grades and marks, and referring them to the instructor/teaching team within the time period dedicated to this matter. This is from the School's perspective.		
		8.8. AR. 50. The guidelines determining critical issues regarding handling students' complaints are available. *Note:* issues such as, the time period for registering a complaint and getting a response, the forms' formats for recording the complaints and the instructor's reply, the procedures for recording and replying to the complaints, how students are allowed to send their complaints to a higher authority (such as schools' Dean to follow up their complaint or complain regarding the way their complaint was handle) and so on.	8.8. CT. 58. For handling the complaints, the guidelines were followed completely and precisely.	8.8. AS.59.The guidelines are adequate and following them is easy.
				8.8. AS.60. All the complaints are replied and handled promptly

				and accurately, and students are satisfied with the system for registering their complaints and receiving a reply.
	8.9	Reviewing the reports from the instructor/ teaching team regarding plagiarism and other types of delinquency to be sure that the policies and required procedures are followed and nobody is excluded. This can be done by the School. This is from the school's perspective.		
		8.9. AR. 51. A guideline regarding how the reports should be reviewed is accessible.	8.9. CT. 59. The plagiarism and other types of delinquency are managed based on the university's policies and all the required procedures are followed.	8.9. AS.61.The policies and procedures regarding plagiarism and other types of delinquency are suitable and clear.
				8.9. AS.62.The students are satisfied with implemented policies and procedures and there is no major legal issue in this regard.
	8.10	Evaluating the faculty and teaching team members at the end of the course based on the surveys, received complaints, and performance reports during the semester. HRM component can be responsible for this task. This is from the school's perspective.		
		8.10. AR. 52. A copy of guidelines, along with the forms for evaluation means and reports are available for evaluating the faculty and teaching team at the end of the semester.	8.10. CT. 60. Based on the guidelines, a report regarding teaching team evaluation for the course is prepared.	8.10. AS.63.The information provided by the report is helpful and informative, and informs about strengths and desirable modifications.
9	9.1	Establishing an evaluation system of processes and means to assess and evaluate the university's program regularly (Sherry, 2003). This can be done by Strategic Management. This is from the school's perspective.		

		9.1. AR. 53. A written guideline including policies, standards, and procedures for evaluating the program from various perspectives is available by selecting various appropriate evaluation methods (Asif & Raouf, 2013). *Note:* The evaluation includes: program effectiveness is calculated by collecting and analyzing data and information regarding: enrollment, costs, and successful / innovative uses of technology (Phipps & Merisotis, 2000); instructional material are reviewed periodically to ensure they meet program's standards. While these items, also, are indicated regarding the review: who is responsible, when to do the review, and what are the criteria -as a protocol, instruction, etc. -for evaluation. (Phipps & Merisotis, 2000).	9.1. CT. 61. The reports and feedbacks regarding the programs' evaluation are collected and analyzed on time, and the results will be used for developing or updating the strategic plan. *Note*: A table for required data and information is presented in *table 18*.	9.1. AS.64.This process for collecting and interpreting the information regarding the program's evaluation is useful and suitable for operating on.
	9.2	Evaluating the strategic plan (Asif & Raouf, 2013). This task can be done by Strategic Management. This is from the school's perspectives.		
		9.2. AR. 54. Guidelines and procedures are developed regarding how to compare the objectives and goals	9.2. CT. 62. The evaluation is done correctly and based on the provided guidelines.	9.2. AS.65.The guidelines are clear and they can provide relevant information which can be used to

		defined in strategic with real outcomes and impacts of the program at the end.		make necessary changes.
	9. 3	Evaluating support services (Asif & Raouf, 2013). This task can be done by Strategic Management. This is from the stakeholders' perspectives.		
		9.3. AR. 55. The guideline for evaluating the support services is available, which evaluate the whole process of managing the requests and complaints received from various components, units or individuals, preparing a report, and sending it to the respective school for evaluation and decision making.	9.3. CT. 63. There is a system for recording and reporting the complaints received from various components, units, and individuals, including the way student service handled students' requests and complaints.	9.3. AS.66.The guideline is adequate and useful to have a smooth process for managing the requests and complaints.
	9.4	Evaluating the ICT security and the ICT strategy plan. This can be done by the ICT component.		
		9.4. AR. 56. The guidelines for evaluating ICT's operations and security are provided.	9.4. CT. 64. The evaluation report is undertaken and received by the respective authorities for decision making.	9.4. AS.67.The guidelines are based on the latest standards and ICT security is ensured.
	9.5	Providing the results of the evaluation process to the authorities and respective individuals/ divisions for follow up and undertaking the required changes by publishing the results via appropriate media. This task connects this phase to the first phase directly, as described in the discussion regarding the modified model (See *figure 20*). This will be done by the Strategic Management.		
		9.5. AR. 57. A copy of guidelines which determines how and which parts of the outcomes and results of evaluation phase should	9.5. CT. 65. Based on the guidelines the results/outcomes of the program evaluation process is distributed among respective parties,	9.5. AS.68.The whole process of evaluation the program is evaluated and modified based on the feedback received from respective parties

		be published, who should have access to the evaluation outcomes, and which actions should be taken based on the outcomes, is available to be followed.	and necessary actions are taken by the authorities, as the completion for the quality management process.	who have access to the evaluation results.
				9.5. AS.69.The guidelines are clear, and the report prepared based on them are presenting relevant information and can be used to make essential and useful changes.

Table 12

Table for task 6.4

1	Information is clear and presented without grammar/spelling errors (Mandernach, et al, 2005).
2	Unit dates are set (Mandernach et al, 2005).
3	Announcements have been updated and set to appear at relevant points throughout the term (Mandernach et al, 2005).
4	The materials for orientation session are ready and the date is set before semester starts (Curry, 2003).
5	Personalized letters for welcoming each student are prepared and ready to be sent (Caplan, 2004).
6	Course policies and procedures are written, which may include: methods/type of communication preferred (email, phone call, voice mail, etc.), guideline for online participants, etc. (Mandernach et al, 2005).
7	Grading policies are determined and recorded, which covers issues like late work policy, or personal participation policy, etc., and general grading criteria or grading rubrics are provided. Instructor clearly explains the grading system or method for assigning points (i.e. the weight of each assignment, the grading scale used, etc.) (Mandernach et al, 2005).
8	Policies for participation and attendance is written, which may include: expectation for involvement, time investment, etc. (Mandernach et al, 2005)
9	Course outcomes are clear and measurable (Puzziferro & Shelton, 2009).

10	Discussion directions is recorded which clearly specify the number and type of responses required of students, and instructor, by setting guidelines and expectations for discussion interactions (Mandernach et al, 2005).
11	Instructor communicates expectations in a clear and consistent manner (Mandernach et al, 2005).
12	Activities are based on course materials that are tied directly to learning objectives (Puzziferro & Shelton, 2009).
13	Assignment directions is set, which clearly specify requirements and directions for submission (Mandernach et al, 2005).

Table 13

Table for task 7.9

There is a contact office/ person for answering technical question or solving technical problems 24/7, (Simonson, Smaldino, Albright, & Zvacek, 2000) or Asynchronous access 24/7, and Synchronous access at clearly identified times (Hughes, 2004).
Social contact provided (Moore & Kearsley, 2012).
There is a system for quick response with acknowledgment and follow up, which would be a follow-through to resolution of the issue (Hughes, 2004).
Various units and individuals have the ability to identify problems with policies, procedures, or system, and suggest change (Hughes, 2004).
Access by attendants to all critical databases and expertise is provided (Hughes, 2004), which means that (the personnel in any help desk can have access to the databases needed for finding the essential information).
General information about online learning, technology requirements, rules, procedures, and help for using of the interactive tools, along with the resources available to students for technical help and for obtaining the proper software and Internet services required for the course (ICT) (Caplan, 2004).
The linkage between different systems and databases is proper and reliable, which means that :the right students are automatically in the right course at the right time, the right student information is easily available to the right instructor and any other authorized person, the instructor needs to be able to manipulate the student data as needed for the course; such as, submitting and editing final marks, adding assignments' grades, to contact students as a group or even in sub-groups, or individually, etc. (Anderson, 2008).

Table14

Table for task 7.13

Course is well organized:
Specific expectations are set with respect to determining a minimum amount of time per week for study and doing homework assignments, and expectations and flow of course activities are easy to understand (Phipps & Merisotis, 2000).
Instructor is consistently well-prepared and organized (threads and assignments are posted in a timely manner), manages the time efficiently (Mandernach et al, 2005).
Course is conducted according to the expectations and designated schedule presented in the syllabus, which means that students would know on a daily/weekly basis what is expected of them, and any deviations being communicated in advance to students via announcements or other course tool, and course activities are clear and relevant (Mandernach, et al, 2005).
Instruction is done properly:
Instructor is able to explain concepts clearly and effectively, and instructor stressed important points in information resources (lectures, discussion, etc.) (Mandernach, et al, 2005).
Instructor strengthened students' understanding of course concepts through various interactions (discussion, grade book, feedback, etc.) (Mandernach et al, 2005).
Instructor trains and provides information in securing materials through electronic databases, interlibrary loans, government archives, news services, etc. (Phipps& Merisotis, 2000).
Instructor gives instructions to students in the proper method of effective research including assessment of the validity of resources (Phipps& Merisotis, 2000).
Monitoring students' appropriate use of learning resources (Sherry, 2003).
Classroom Climate is suitable for an online course:
Instructor maintained a positive atmosphere in the online classroom, and instructor is sensitive to student difficulty with course work (Mandernach et al, 2005).
Interaction and Discussion are well organized and done properly:
Instructor is easy to communicate with and available for consultation, and he/she is responsive to student questions (Mandernach et al, 2005).
Responding to students communications via email, chat room, voice mail, etc. the nature of these correspondences would be different, from asking about how to study online, technological problems which prevent them to submit an assignment or taken a test or exam.
Instructor needs to determine which type of questions should be referred to him/her and which ones to the ICT, administration, or student support.
Coordinating the discussion in forums and chats (Caplan, 2004), which means that instructor effectively leads online discussions, synthesizing student posts and stimulating ongoing discussion (Mandernach et al, 2005).
Instructor is working closely with the different support units (technical, training, web development unit, IT unit, etc.) (Caplan, 2004).
Instructor participates actively in course discussions on a regular basis (based on instructor attendance policy), and communicates clearly and meaningful in course discussions (Mandernach, et al, 2005).

Instructor purpose of interact via various technology (email, voice mail, chat rooms, etc.), and the nature of interactions are clear, meaningful and consist with course objectives and activities (Phipps& Merisotis, 2000).
Assignments are well managed and fulfilled their objectives and aims:
Instructor marks homework assignments with suitable feedbacks, and uses the grade -book in a timely manner to keep students informed of their progress (Mandernach et al, 2005).
Instructor incorporates and utilizes all assessments specified by the course developer (Mandernach et al, 2005).
Instructor clearly communicates assignment guidelines (Mandernach et al, 2005).
Assignment due dates and submission instructions are clear and provide adequate advanced notice (Mandernach et al, 2005).
Instructor schedules assignments in a manner amenable to an accelerated course while providing time for thoughtful feedback -which needs to be helpful, individualized, constructive on all assignments by correcting errors, highlighting strengths, and providing suggestions for improvement (Mandernach et al, 2005).
When necessary, instructor includes additional resources to assist students in meeting assignment expectations (Mandernach et al, 2005).
Instructor utilizes the comment feature of the grade book to give individual feedback that not only highlights reasons for assigned grade but also suggests strategies for improvement (Mandernach et al, 2005).
Grade book comments are clear, respectful and professional (Mandernach et al, 2005).
Instructor assigns the grade that reflects/differentiates the *quality* of student performance as well as the *quantity*-which means that instructor maintains a consistent and appropriate definition of "good" performance that reflects the level (100, 200, 300, etc.) of the course (Mandernach et al, 2005).
Overall course grades accurately represented students' mastery of course objectives (Mandernach et al, 2005).
Final exam is well organized and conducted promptly:
Instructor provides general information concerning the nature and format of the final exam with resources to help students (Mandernach, et al, 2005)

Table 15

Table for task 8.4. (Source: Stringer & Finlay, 1993)

	A: Course organization and structure:
1.	Course was well organized
2.	Material were presented in an orderly manner
3.	Course objectives were stated and pursued
4.	Online classes and conference calls were time well spent
5.	Expectations of student learning were clear
6.	Student participation was good (participation rate in each activity)
7.	The overall course handout was clear and useful

8.	Course assignment schedules were easy to follow
	B: Course content
1.	Topics taught were appropriate to this course
2.	Course materials was not too difficult for me
	C: Workload/course difficulty:
1.	Pace of the course was suitable, not too fast and not too slow
2.	In relation to other courses, this workload was heavy/light
3.	Too much /little materials was covered
4.	Course challenged me intellectually
5.	Reading assignments were very difficult
6.	Too much work was assigned out of class
7.	Units were very similar in terms of their demands
	D: Marking and exam:
1.	Assignments added to course understanding
2.	Exams reflected important aspects of the course
3.	Assigned marks were fair and impartial (unbiased)
4.	Helpful comments were made on assignments given
5.	General feedback was valuable
	E: Course impact on students:
1.	A great deal was learned in this course/not much gained
2.	The course held my interest/boring
3.	The course was valuable/waste of time
4.	The course fulfilled my expectations
5.	The course stimulated my interest in this area
	F: Breadth of coverage:
1.	Course examined applications of research findings
2.	Course gave background of ideas/concepts
3.	Course gave different points of view
4.	Course discussed current developments
	G: Course delivery:
1.	Lecturers/ instructors were on time for synchronous activities
2.	The quality of teaching was generally high

Table 16

Table for task 8.5.

- How many times have you registered for this subject?
- Did you attend the course activities regularly?
- How often did you attend the course activities?
  - ✓ 25 percent

✓ 50 percent ✓ 75 percent ✓ 100 percent ▪ Why did you decide not to attend the course? ✓ Working problems ✓ Timetable inconvenience ✓ Personal reasons ✓ Because of the Instructor/teaching team ✓ I do not like the instructor's/teaching team's methodology ✓ Others ▪ What was your interest about this course? ▪ What was the level of difficulty in this course compare to the other courses in this program?

Table 17

Table for Task 8.6.

There is a detailed report about the total instruction time for the whole course (including lectures, answering the questions, solving the problems, etc.) and time per subject matter area (for each subject within the course) (Scheerens, Luyten, & van Ravens, 2011).
Average loss of time per teaching hour (technology problems, connection problems) is reported (Scheerens, Luyten, & van Ravens, 2011).
Percentage of lessons "not given" is reported (Scheerens, Luyten, & van Ravens, 2011).
Timely submission of assignments is reported (Asif & Searcy, 2014).

Table 18

Table for task 9.1.

Evaluating the programs accountability:
The number of awards, prizes, funds, fourth party money, standards' certifications, etc. achieved by university within a special period of time.

Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness (Phipps & Merisotis, 2000).
Satisfaction from various stakeholders, such as, alumni, Employees, Faculty, and Students are sought and evaluated (Burke & Minassians, 2002).
The information regarding the social impact, such as, Percentage of unemployed, Average income such as, starting salaries of alums, type of employers recruiting for the program (Widrick, Mergen, & Grant, 2002), skills shortages and surpluses (Scheerens, Luyten, & van Ravens, 2011) are collected and evaluated
Employers' satisfaction with graduates' skills is sought and evaluated (Asif & Searcy, 2014).
Graduates' employment rate (Asif & Searcy, 2014), as the number of graduates who has found jobs related to their studies is determined.
Financial aspects of the program, such as tuition and other revenues, are determined (Moore & Kearsley, 2012).
Alumni compensation and positions over the career cycle are assessed (Widrick, Mergen, & Grant, 2002).
The ability to achieve on licensing boards, and standardized tests for graduates is estimated (Widrick, Mergen, & Grant, 2002) by the percentage of graduates who can pass these tests or get the licenses.
Evaluating research outcomes:
Research outcomes, such as, published paper, Projects, PhD thesis, third party budgets (Burke & Minassians, 2002), number of patents, number of faculties attending conferences and seminars (Asif & Searcy, 2014) are evaluated.
Percentage of budget allocated to the research comparing with the actual payments (Asif & Searcy, 2014).
Evaluating achievements:
Graduation rates, Proportion of students graduating without delay, and class repetition rates are calculated (Scheerens, Luyten, & van Ravens, 2011)
Dropout rate (number of dropouts/ number of students enrolled) is calculated (Asif & Searcy, 2014).
Graduates enrolment rate is calculated (Asif & Searcy, 2014).
Changes in faculty's status, such as, staff reputation and staff turnover is calculated (Moore & Kearsley, 2012).
Evaluating revenues:
Income generated from research projects (Asif & Searcy, 2014) is calculated.
Income generated from tuition (Asif & Searcy, 2014) is calculated.
Evaluating library efficiency for both resources and services:
Faculty members' and students' evaluation of library services (Asif & Searcy, 2014), by asking about: how often they could not find the resources they wanted in the library, whether the library support and training was useful or not, the library staff were well informed and were able to help and assist, etc.

2.2.3.4.4. The Guideline List. It was discussed before that we need a list of all the guidelines at the beginning of the program design, while some of them already exist and some of them need to be prepared specifically for the new program. Here is the list of essential guidelines for designing, developing, delivering, and running a program in an online university, which are the main indicators for *quality assurance* process.

List of Guidelines (Quality Assurance)	
Guidelines for establishing the Program	
1	*2.1. AR. 2.* Guidelines in the form of procedures, forms and charts for acquiring the required approvals for the new program/research.
2	*2.1. AR. 3.* Guidelines for formulating and estimating the capacity and qualifications for faculty to design courses for the new program, which should include the methods of calculation and formulas.
3	*2.2. AR. 4.* A guideline including the procedures and checklists for examining the suggested plan for the new program.
4	*3.1. AR. 5.* Guidelines for formulating a detailed and clear plan for launching the new program/research to the candidates based on the available resources.
5	*3.2. AR. 6.* Guidelines, which indicated the procedures for acquiring approvals for the new program, what kind of approvals is needed, and who has the authority to provide the approvals.
6	*3.3. AR. 7.* Guidelines as policies and procedures for defining and evaluating the currency of the materials and activities in designed new program/research.
7	*3.4. AR. 8.* Guidelines for establishing new infrastructure for the new program.
8	*5.1. AR. 17.* Guidelines for the new program’s Admission.
9	*5.2. AR. 18.* Guidelines for how to handle complaints regarding Admission procedures and selection.
10	*6.10. AR. 30.* Guidelines for managing and expanding the library or other university’s intellectual properties.
11	*9.1. AR. 53.* Guideline including policies, standards, and procedures for evaluating the program from various perspectives.
Guidelines for ICT	
12	*3.7. AR. 11.* Guidelines and policies for ICT security and its integrity.
13	*3.8. AR. 12.* Guidelines for establishing a system of sending notifications regarding technical problems and solving them.
14	*6.3. AR. 22.* Guidelines for preparing information sheets and training for instructors and design team, regarding how to use technology and equipment for designing the course, and providing training for instructors and teaching teams concerning how to use the website.
15	*6.6. AR. 25.* Guidelines and standards concerning developing the course website.

16	*6.8. AR. 28.* Guidelines from ICT, which ICT determines the access and authority over the course content changes and access to the information, following the existing detailed manual, while testing the system by examining it various essential features.
17	*7.8. AR. 38.* Guidelines for providing a reliable system for university's technology system.
18	*7.9. AR. 39.* Guidelines for determining the suitable factors and features for monitoring the course activities.
19	*8.2. AR. 43.* Guidelines and standards for implementing a secure and smooth course assessment based on the latest standards for an online course assessment for the students in the course.
Guidelines for the courses	
20	*6.1. AR. 19.* Guidelines regarding minimum standards for course development /design.
21	*6.4. AR. 23.* Guidelines for determining how to prepare a course syllabus, a study guide, an online grade book, and profiles.
22	*6.5. AR. 24.* Guideline for determining criteria for assessing and controlling the designed course.
23	*6.11. AR. 31.* Guidelines for specifying the procedures for copyright clearance of the course materials.
24	*6.12. AR. 32.* Guidelines, including policies and standards, for indicating the criteria for assessing and ensuring the currency of course material and activities.
25	*7.7. AR. 37.* Guidelines for instructor to determine how to define their own specific rules for the course (such as time periods to do the assignments, rules for participating in forums or online sessions, rules for late submissions, etc.), and how to publish them.
26	*7.11. AR. 41.* Principles for teaching and managing an online course for the instructor and the teaching team.
27	*8.1. AR. 42.* Guidelines for students' assessment and finishing activities for the course.
Guidelines concerning collecting and analyzing data	
28	*1.1. AR. 1.* Guidelines including policies, procedures, forms and checklists for collecting data from stakeholders, which states: the information that is needed, providers of the information, methods and instruments for gathering the data, intervals for gathering the data, responsibilities with regard to these processes, rules concerning processing, distributing and sorting the data, personal safety, and data protection.
29	*8.3. AR. 44.* Guidelines for course's learning outcomes.
30	*8.3. AR. 45.* Guidelines and regulations, rules, and standards for embracing and evaluating students' learning results.
31	*8.4. AR. 46.* Guideline as instruments and procedures for gathering data about students' satisfaction.
32	*8.5. AR. 47.* Guidelines for designing and implementing a student survey for drop-outs.
33	*8.6. AR. 48.* Guidelines and forms for preparing a report regarding measuring efficient use of time in the course by the instructor /the teaching team.
34	*8.7. AR. 49.* Guidelines for determining how to make the report and what information is needed to be reported, regarding handling students' plagiarism and other types of delinquency.
35	*8.9. AR. 51.* Guideline regarding how the reports from instructor/ teaching team regarding plagiarism and other types of delinquency should be reviewed.

36	*9.2. AR. 54.* Guidelines and procedures regarding how to compare the objectives and goals defined in strategic plan for the program with real outcomes and impacts of the program at the end.
37	*9.3. AR. 55.* Guidelines for evaluating the support services.
38	*9.4. AR. 56.* Guidelines for evaluating ICT's operations and security.
39	*9.5. AR. 57.* Guideline which determines how and which parts of the outcomes and results of evaluation phase should be published, who should have access to the evaluation outcomes, and which actions should be taken based on the outcomes.
Guidelines for students	
40	*3. 9. AR. 13.* Guidelines for general qualifications for students in the new program.
41	*3.9. AR. 14.* The comprehensive guidelines, as an extended version of the university's general guidelines, for new policies and procedures for ensuring the integrity of students' work, credit, and degrees in the new program.
42	*4.1. AR. 15.* Guideline that determines which information and in which format should be presented to the interested potential new program's candidates.
43	*6.7. AR. 26.* Guidelines concerning the essential information need to be presented to the students, including the manuals and instruction with details for using, accessing, and navigating university's website and its various tools, applications and pages, and how to present that (via brochures, pamphlets, websites, etc.).
44	*6.7. AR. 27.* The manuals for determining how to use university's online learning platforms.
45	*6.9. AR. 29.* A list of all disciplinary policies, procedures and guidelines, along with approval authorities (which were prepared and provided by respective university's divisions or outside institutes and authorities) in the university's website.
46	*7.3. AR. 33.* Administrative regulations for faculty members; Regulations such as, guidelines on plagiarism, privacy, academic appeal procedures, library facilities, and access to counseling and advisory services exist.
47	*7.4. AR. 34.* Guidelines for providing access to the library for students.
48	*7.6. AR. 35.* Guidelines for arranging an orientation session at the beginning of the semester, including the necessary information and the way to present them.
49	*7.7. AR. 36.* The guidelines for general rules for students (such as, how long they can stay in the program, or how many times they can take the course, the dates for exams and tests, the duration of the semester, grading system, grading policies, etc.).
50	*7.10. AR. 40.* Guidelines indicate the policies and procedures for resolving students' complaints or referring them to the respective authorities.
51	8.8. AR. 50. Guidelines determining critical issues regarding handling students' complaints concerning their grades and marks.
Guidelines for HRM	
52	*3.5. AR. 9.* Guidelines regarding criteria for recruitment.
53	*3.6. AR. 10.* Guidelines for systematic instructor's training and monitoring.
54	*4.2. AR. 16.* Guidelines determining criteria for assigning required staff and determining assignment procedures for promoting the program.
55	*6.2. AR. 20.* Guideline for faculty and staff qualifications for teaching in the new program.

56	*6.2. AR. 21.* A supplementary guideline for determining appropriate qualifications for teaching and managing each specific course (*if applicable*).
57	*8.10. AR. 52.* Guidelines, along with the forms for evaluation means and reports for evaluating faculties and teaching team members at the end of the course.

3. Conclusion

As the number of online universities are increasing rapidly, the academic world demonstrates its concern for providing higher education in these institutes with quality. It is due to the fact that in online universities, media plays an important role and this fact makes differences in providing high quality teaching-learning environment. Therefore, it is essential to provide a sound quality management system specifically for online universities. In addition, these online universities are providing *education* and the main concepts and ideas for quality management in education can be applied to their systems as well.

The main objective in this study is to introduce a quality management system for an online university. The main challenge regarding the concept of quality, in general, is that quality is an abstract concept and demonstrating it in a quantitative mode is not easy. On the other hand, for being able to provide quality, some measurable features are needed to be initiated. So, in any study regarding the quality management, the key point is to find a way to illustrate and measure the concept of the quality with a quantitative technique.

The chosen approach for addressing the quality management in an online university in this study is that the quality management system for providing high quality academic environment in the universities is considered as the main approach, and then, the structures and features of distance education, in general, and online universities, in particular, are applied into that.

Also, for providing an academic environment with quality for a higher educational institute, one of the main aspects is to consider a *system approach* and analyze various systems/subsystems and their associated processes. Then, based on these systems/subsystems, their processes, and the relations among them, a system for quality management be established.

Therefore, in this study, after reviewing the literature regarding distance education and the concept of quality in education, first, a model, which represents the essential components of a university and their relations, is designed and described in detail. This model is a generic model for a university, while in the discussion for describing and explaining it, the main features of an online university are considered and examined.

By considering these main components of a university and their relations, *a chain process model* was designed. The aim for having this *chain process model* is to determine the main processes for designing, implementing and running a program in an online university. Then, based on these processes, the main tasks for undertaking them are defined, and the indicators for executing these tasks from quality management point of view are determined. As the next step, the indicators are clustered and the desirable features for each category are defined. Finally, a measurement table is prepared, by, first, putting all the indicators in one interacting table, and secondly, assigning the desirable weight for each cluster and suitable points for each indicator's features. As a result, the quality in an online institute is shown in a quantitative style and as a particular number.

For examining these designed models and the measurement system associated with them, a survey with a small group of universities (10) was designed and administrated. As a result, it was found that the participants (7) rate the designed models and measurement system, as an overall, useful and practical. Noticeably, this small survey is not enough to evaluate the designed models, and they cannot show all the designed models' and the measurement system's weaknesses and flaws. Furthermore, they should be tested after being applied in a real academic environment.

Therefore, the main challenge regarding this comprehensive quality management model is how to define its implementation process, especially for a running program in an online university. Also, the question concerning this conceptual framework's and its associated measurement system's effectiveness and efficiency remains to be addressed.

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- AACSB International- Advancing Quality Management Education Worldwide Website: http://www.aacsb.edu/

Appendix 1[2]

To complete the measurement table, first, for each indicator the total points based on the defined features needed to be calculated, and after the calculation was done for all the indicators, the total points for each cluster and the average points for each cluster are calculated. Second, the total average of the points for each cluster multiply by the weight defined as a percentage for that specific cluster is calculated, that finally, a number as percentage shows a numeral figure (as a quantity measurement) for the quality in the university is calculated.

Here are the tables for initial defined tasks and their indicators and at the end the final formula for calculating the quality in an online university is shown.

Guideline features:

1- The existence of the guideline for that specific task,
2- It is accessible for respective unit or individual,
3- It is clear and easy to follow,
4- It is evaluated and updated systematically based on the feedbacks or changes.

[2] **Appendix 1** is the initial *measurement table* as an Excel file designed to show how the calculation for measuring quality is done. As the dissertation can be published only in PDF format, this file is modified to be included in the PDF file. The original Excel file can be received via email by contacting the author.

	Phase	Task	Guidelines	Feature 1	Feature 2	Feature 3	Feature 4	Total Points
1	One	Collecting data from various stakeholders, such as, employers, alumni, graduates, funders, labor market, faculty, administrations, government, policy makers, parents, the community, professional and accreditation bodies, etc.	There are policies and procedures, forms and checklists regarding how to gather data and information from which stakeholders and how often to do that, along with who do the data collecting and where to save them, and to whom send them.	50	20	20	10	100
2	Two	Preparing the detailed reports about the new program or new research project, by specifying the educational objectives for the program/research, explaining how the program/research emerges from and contributes to the mission, goals and objectives of the university.	All the procedures, forms and charts for getting the required approvals for the new program/research are available.	50	20	20	10	100
3	Three	Establishing policies and infrastructure for new program/research project.	The existence of policies and procedure for ensuring the integrity of students' work, credit, and degrees.	50	20	20	10	100
4	Three	Establishing policies and infrastructure for new program/research project.	The new policies and infrastructure are designed for the new program.	50	20	20	10	100

5	Three	Ensuring the currency of materials in the program/ research and the activities predicted for it; such as courses, and thesis, projects, etc.	Policies and procedures for defining and evaluating the currency of the materials in the program/research and courses exist and are up-to-date.	50	20	20	10	100
6	Three	Providing the standards and policies for hiring and updating them systematically.	Criterion for recruitment exists	50	20	20	10	100
7	Three	Addressing the security and integrity of the information system in the school's technology plan.	There are guidelines and policies for ICT security.	50	20	20	10	100
8	Six	Providing the basic policies and frameworks for designing a course	Guideline exists regarding minimum standards for course development and design	50	20	20	10	100
9	Six	Determining appropriate faculty and staff qualification for the course.	The qualification is based on university's policies and standards, along with the course needs and requirements.	50	20	20	10	100
10	Six	Providing the manuals and instruction with details for using and accessing university's website, course pages, library, student support and service, administration are ready, and the instructions are clear and understandable, and well written without any spelling or grammar mistakes.	there are Simple and clear instructions, with descriptive detailed manuals and instructions with pictures and FAQ.	50	20	20	10	100

11	Six	Determining the access and authority over the providing the course content and changing it	ICT follows the detailed manual for giving access and authority over the course content changes and access to information.	50	20	20	10	100
12	Seven	Providing with written resources for faculty members to deal with issues arising from student use of electronically accessed data.	Administrative regulations including: guidelines on plagiarism, privacy, academic appeal procedures, library facilities, and access to counseling and advisory services exist and everybody has access to it.	50	20	20	10	100
13	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	Rules, procedures, and help for using of the interactive tools.	50	20	20	10	100
14	Eight	Handling students' plagiarism and other types of delinquency.	There are clear policies and procedures for handling students' plagiarism and other types of delinquency and reporting them to administration and school.	50	20	20	10	100
15	Eight	Evaluating faculties and teaching team members periodically and regularly.	Policies and procedures for evaluating instructors exist and are followed.	50	20	20	10	100

16	Nine	Selecting various appropriate evaluation methods.	The policies, standards, and procedures for evaluating program from various perspectives exist and followed; such as, program effectiveness by collecting and analyzing data and information regarding: enrollment, costs, and successful / innovative uses of technology	50	20	20	10	100
			Total for all the indicators					***1600***
			Average Points= Total Points/Number of Indicators					**100**

Checking and Controlling features:

1- the task is done smoothly,
2- the task is done promptly and on time,
3- the task is done correctly with no failure or mistake,
4- the task is done by appointed unit or individual.

	Phase	Task	Checking and Controlling	Feature 1	Feature 2	Feature 3	Feature 4	Total Points
1	Two	Preparing the detailed reports about the new program or new research project, by specifying the educational objectives for the program/research, explaining how the program/research emerges from and contributes to the mission, goals and objectives of the university.	All the procedures and charts are followed to get the required approvals, and a detailed report about the new program/research and its objectives is developed and presented to the university's management for approval	20	30	40	10	100
2	Two	Receiving and evaluating the suggested program plan.	All the resources are available and the plan is prepared based on the university's policies and procedures.	20	30	40	10	100
3	Two	Receiving and evaluating the suggested program plan.	Compatibility of the program/research with strategic development plans and the program/research fits to the university's policies and standards.	20	30	40	10	100
4	Two	Receiving and evaluating the suggested program plan.	The marketability of the program is analyzed and considered in the approval	20	30	40	10	100
5	Three	Designing a detailed program/research plan with predicting all the resources needed for each semester.	A detailed and clear plan is ready to offer the program/research to the interested candidates.	20	30	40	10	100

6	Three	Designing a detailed program/research plan with predicting all the resources needed for each semester.	The program/research plan is compatible with university and school's procedures, policies and standards.	20	30	40	10	100
7	Three	Designing a detailed program/research plan with predicting all the resources needed for each semester.	Appropriate faculty qualifications are determined.	20	30	40	10	100
8	Three	Obtaining approval from the board (or other higher management levels) for the designed program/ research.	All the necessary approvals, based on university's policies and standards, and after following all the procedures, are acquired.	20	30	40	10	100
9	Three	Appointing and assigning staff for various tasks and jobs	Staff and personnel are hired according to their required qualification in the university's hiring policies, standards and procedures, and course requirements.	20	30	40	10	100
10	Three	Providing essential trainings for faculties and teaching team members.	Instructors (or other members of teaching/research team) participating in mandatory trainings (either online or face-to-face) by ICT, administration, library, etc.	20	30	40	10	100
11	Three	Providing a system of solving the technical problems during *the designing the program* phase.	A system of sending notifications regarding technical problems and solving them is available and works smoothly.	20	30	40	10	100
12	Four	Providing complete information about the program with details for the students and other interested individuals/groups.	All the essential information exist on different media for promoting the program, while interested individuals/groups/stakeholders can have access to all of them, and nothing is vague or ambiguous about the program. The information in University's website, brochures, etc. is accurate and	20	30	40	10	100

			up-to-date. The means of communication and information about contacting the University for getting help are promptly ready and properly promoted.					
13	Four	Assigning staff (who have enough information regarding the program and applying procedures, and can provide accurate information) for assisting students to find the best program and approach for their studies by giving guidance and answering questions regarding the program, along with, helping interested candidate with sending their request with necessary documents and answering their questions regarding administration and admission procedures. This task can be addressed by having a 24/7 portal or contact services for students via website, telephone, chat, email, etc.	There are enough personnel available to help and guide interested individuals/stakeholders.	20	30	40	10	100
14	Four	Uploading the information in the university's website regarding the program.	The information regarding the new program in university's website is up-to-date and accurate and links to essential information and contacts are working properly.	20	30	40	10	100
15	Five	Receiving and evaluating the applications and forms	Choosing the suitable students for the program, by reviewing all the applications, and then	20	30	40	10	100

		from students by assigned personnel for each school or program (depends on administration policies in the university) for undertaking this job accurately and thoroughly	evaluating them based on the university's requirements, and the program's policies and requirements					
16	Five	Receiving and evaluating the applications and forms from students by assigned personnel for each school or program (depends on administration policies in the university) for undertaking this job accurately and thoroughly	Evaluating students' documents for being genuine and correct.	20	30	40	10	100
17	Five	Setting up a system for receiving complaints regarding admission procedures and selection, and responding to them promptly and thoroughly	A system for submitting a complaint and receiving response by students is available and works smoothly.	20	30	40	10	100
18	Six	Monitoring the process of design and being sure that process goes smoothly and within the university's and school's framework.	School and instructor/ design team are following the policies, frameworks, and standards for designing the course	20	30	40	10	100
19	Six	Providing information regarding how to use technology and equipment for instructors and design team, and providing training for instructors and teaching teams for how to use the website	The essential information and trainings are provided at the beginning of this phase.	20	30	40	10	100

		for designing the course						
20	Six	Preparing the basic items at the end of this phase: a course syllabus, a study guide, an online grade book, and profiles.	At the end of the design phase, there are some important points need to be checked in prepared information by instructor/ design team	20	30	40	10	100
21	Six	Evaluating and approving the designed course at the end of the phase.	Approvals are obtained based on university's policies and procedures which include a broad peer review process, along with existence of all the essential elements for a course predicted in university's standards for designing a course.	20	30	40	10	100
22	Six	Arranging technical production and services.	Technical assistance service is prepared and presented by ICT and faculties are encouraged to use this service.	20	30	40	10	100
23	Six	Developing the course page in university's website and essential links to course materials.	The course web page is ready before starting the semester, and all the essential items (syllabus, study guide, professor's complete profile, course materials, etc.) are uploaded in the course page and students can have access to them or download necessary files without any technical problem.	20	30	40	10	100
24	Six	Providing the manuals and instruction with details for using and accessing university's website, course pages, library, student support and service, administration are ready, and the instructions are clear and understandable, and well written	These manuals are updated and available in various forms (brochures, pamphlets, files in university's web site, etc.), and students can have access to them easily.	20	30	40	10	100

		without any spelling or grammar mistakes.						
25	Six	Providing a list of all policies, procedures and guidelines, along with approval authorities that exist in the university's website.	These elements are available in university's webpage and it is easy to find and have access to them.	20	30	40	10	100
26	Six	Ensuring access to library and its effective use for instructor/design team.	There is library training and promotion for faculties.	20	30	40	10	100
27	Six	Handling copyright clearance, reserve readings, etc.	Reviewing prepared course materials for copyright clearance.	20	30	40	10	100
28	Six	Ensuring the currency of materials in the course.	There are evaluation means and processes in school and would be done systematically.	20	30	40	10	100
29	Seven	Hiring and assigning suitable faculty members (such as instructor, teaching assistant, etc.) for delivering the course.	The instructor is hired based on the university's policies and standards, based on instructor's year of experience, instructor in- service training history, instructor professional knowledge and skill, instructor's content knowledge, instructor's knowledge (education) about pedagogical and didactic strategies, instructor's working condition: salary, working time, average class size, training/certification requirements, and incentives, formal qualification of instructor.	20	30	40	10	100
30	Seven	Providing the access to minimal technology required by the program or research design.	minimal technology predicted in course design is available	20	30	40	10	100

31	Seven	Ensuring students' access to sufficient library resources which can include virtual library, and effective use of library.	the library page can be easily found among other institutional Web pages, the library has an up-front tutorial for the new learners or other users, the library is integrated with the institution's online courses, the library has tools to assist with online researches, the library provides access to personal assistance.	20	30	40	10	100
32	Seven	Ensuring that the instructor/teaching team has basic essential skills for using a PC, knowing about file structure, managing back up files, web browser functions, windows functions, software applications for teaching on web, basic Internet functions, etc.	Instructor/teaching team participated in training assigned by the university, or has the proof for necessary qualifications.	20	30	40	10	100
33	Seven	Providing access to technical assistance for the students, which is detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course and convenient access to technical support staff.	This information is presented in orientation session and assistance exists during the semester and students can easily have access to them.	20	30	40	10	100
34	Seven	Providing preparation of new students.	There is at least one orientation session (first meeting) either online or face-to-face, and it is planned carefully during the design phase and all the vital information are presented to the students.	20	30	40	10	100

35	Seven	Providing preparation of new students.	Introducing students to the distance learning environment	20	30	40	10	100
36	Seven	Laying out the ground rules by instructor needs, and one way is to include the rules in syllabus and make sure that the students read it and are aware of it.	There is a Welcome Announcement, which can be a welcome video or a face-to-face session. Students participated in orientations and trainings, and are given essential information about studying in online environment. The orientation includes welcoming students, “icebreaker” activities, text announcement, and covering any “housekeeping items”. Also, there is an introduction to the course structure, style, learning experience, technology requirement, available support resources, course policies, general expectations, introducing the instructor.	20	30	40	10	100
37	Seven	Providing information about how to access the course on the Web, how to navigate it successfully, and student log-in and password information for course Web site, along with providing procedures, rules, and help for use of the interactive tools.	The students are provided with this information and have no problem with log-in to the university’s website, and have access to course webpage at the end of this phase.	20	30	40	10	100
38	Seven	Providing support for HRM regarding a systematic instructor training via Peer monitoring and continues through the progression of the online course.	The training for instructor/teaching team is provided and their work is monitored regularly.	20	30	40	10	100

39	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	There is a contact office/ person for answering technical question or solve technical problems 24/7, or Asynchronous access 24/7, and Synchronous access at clearly identified times	20	30	40	10	100
40	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	Social contact provided	20	30	40	10	100
41	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	Quick response with acknowledgment and follow up, which would be a follow-through to resolution of the issue.	20	30	40	10	100
42	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	Access by attendants to all critical databases and expertise	20	30	40	10	100
43	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	General information about online learning, technology requirements, with the resources available to students for technical help and for obtaining the proper software and Internet services required for the course.	20	30	40	10	100

44	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	The linkage between different systems and databases is proper and reliable, which means that :the right students are automatically in the right course at the right time, the right student information is easily available to the right instructor and any other authorized person, the instructor needs to be able to manipulate the student data as needed for the course; such as, submitting and editing final marks, adding assignments' grades, to contact students as a group or even in sub-groups, or individually, etc.	20	30	40	10	100
45	Seven	Providing means for resolve students' complaints, by answering the questions accurately and quickly with a structural system in place to address students' complaints.	Student service and instructors/teaching teams are well informed.	20	30	40	10	100
46	Seven	Creating a teaching – leaning environment with high quality.	Monitoring the advancement of the course during the semester and checking the instructor/teaching team activities, and students' progress and participation, and course activities are conducted based on course schedule and plan. A checklist for this indicator is presented in table 7.	20	30	40	10	100
47	Eight	Undertaking course assessment and evaluation at the end of the semester, and finishing the course and posting the grades	All the forms related to course assessment and activities and finishing the course are filled and posted to related authorities or uploaded to proper databases.	20	30	40	10	100

		and marks on course web page.						
48	Eight	Undertaking course assessment and evaluation at the end of the semester, and finishing the course and posting the grades and marks on course web page.	Posting students' grades on time and accurately. The grades and marks are available for students on course page and privacy measurements are taken (each student only can see his/her own grades), and the webpage would be updated regarding changes done by the instructor or other authorities promptly.	20	30	40	10	100
49	Eight	Providing support for the instructor and teaching team for designing and implementing a secure and smooth evaluation system (including online test, exams, projects, etc.) for the course.	A safe and secure system for assessment and evaluation for the course exists.	20	30	40	10	100
50	Eight	Evaluating learning outcomes	the grades and marks are given fairly and based on university's policies and standards.	20	30	40	10	100
51	Eight	Handling students' requests or complaints about their grades and marks, and referring it to the instructor within the time period dedicated to this matter.	There is a system for receiving and handling students' complaints.	20	30	40	10	100
52	Eight	Reviewing the reports from Instructor/ teaching team regarding plagiarism and other types of delinquency.	The plagiarism and other types of delinquency are managed based on the university's policies and all the required procedures are followed.	20	30	40	10	100

53	Nine	Establishing an evaluation system to assess and evaluate university's programs regularly, which means that there are evaluation means and processes in the school.	There is systematic plan for evaluating and updating the university's programs, and conducted regularly by schools and chairs/departments. Instructional materials are reviewed periodically to ensure they meet program's standards, and these items are indicated regarding the review: Who is responsible, When to do, What are the criteria (is there a protocol, instruction, etc. for evaluation)	20	30	40	10	100
54	Nine	Establishing an evaluation system to assess and evaluate university's programs regularly, which means that there are evaluation means and processes in the school.	The reports and feedbacks regarding the programs' evaluation are collected and analyzed on time, and the results would be used for developing or updating strategic plan.	20	30	40	10	100
55	Nine	Evaluating the strategic plan.	Comparing the objectives and goals predicted in strategic plan and in defining the program phase with real outcomes and impacts of the program at the end.	20	30	40	10	100
56	Nine	Evaluating the programs accountability.	The requirements for various academic standards and rewards for various programs are regularly prepared and sent to respective authorities, and obtaining approvals are followed up accordingly. (It means that a team or unit in each school or in the university level is responsible for this job)	20	30	40	10	100

57	Nine	Evaluating support services. Which means managing the complaints received from various components, units or individuals and preparing a report and sends it to the respective school for evaluation and decision making.	There is a system for recording and reporting the complaints received from various components, units, and individuals.	20	30	40	10	100
			Total for all the indicators					***5700***
			Average Points= Total Points/Number of Indicators					**100**

Feedback features:

1- Opportunities for offering feedback are given,

2- Feedback is received by responsible unit or individual,

3- It has been analysed along with other essential data and information,

4- The feedback systems and processes are being updated regularly.

	Phase	**Task**	**Feedback**	**Feature 1**	**Feature 2**	**Feature 3**	**Feature 4**	**Total Points**
1	Seven	Monitoring course activities regarding the use technology and equipment for teaching and learning for: students & personnel & instructors.	Ability to identify problems with policies, procedures, or system and to suggest change.	30	20	25	25	100
2	Eight	Conducting Student Satisfaction Survey.	A system for conducting student survey exists.	30	20	25	25	100

3	Eight	Conducting a survey for drop-out students or students who did registered more than once for the course.	A system for conducting survey for drop-out students exists.	30	20	25	25	100
4	Eight	Handling students' requests or complaints about their grades and marks, and referring it to the instructor within the time period dedicated to this matter.	Replying to all the complaints promptly and accurately. (indicator source: students are allowed to send their complaints to a higher authority, such as schools' Dean to follow up their complaint or complain regarding the way their complaint was handle)	30	20	25	25	100
5	Nine	Receiving stakeholders' feedback by conducting various surveys. The survey would be conducted for Alumni, employers, faculty, student.	Comparing the results of the survey with the university's standard rates.	30	20	25	25	100
6	Nine	Evaluating support services. Which means managing the complaints received from various components, units or individuals and preparing a report and sends it to the respective school for evaluation and decision making.	There is a system for evaluating the way student service handles the students' requests and complaints.	30	20	25	25	100
			Total for all the indicators					***600***
			Average Points= Total Points/Number of Indicators					**100**

Performance Indicators and Statistical Data features:

1- They are defined and adequate instruments for collecting/measuring are developed,

2- Collecting procedures are defined and established, 3- They are being compared with objectives and goals, and the acceptable rate or measurement is defined for them,

4- They are taken for further analyses in order to improve resources and processes.

	Phase	**Task**	**Performance Indicators and Statistical Data**	**Feature 1**	**Feature 2**	**Feature 3**	**Feature 4**	**Total Points**
1	Seven	Ensuring the reliability of the technology delivering system.	How many times in a semester/month webpage/email system wasn't available.	25	25	25	25	100
2	Eight	Evaluating learning outcomes.	Students' scores and grades, student completion rates, Retention, etc. are acceptable based the university's achievement standards.	25	25	25	25	100
3	Eight	Conducting Student Satisfaction Survey.	Median evaluation of the course by students, and Students' survey scores are within accepted rate based on university's standards.	25	25	25	25	100
4	Eight	Conducting a survey for drop-out students or students who did registered more than once for the course.	Median evaluation of the course by students (Asif & Searcy, 2014), and Students' survey scores are within accepted rate based on university's standards.	25	25	25	25	100
5	Eight	Measuring efficient use of time in the course.	Total instruction time and time per subject matter area.	25	25	25	25	100
6	Eight	Measuring efficient use of time in the course.	Average loss of time per teaching hour (technology problems, connection problems)	25	25	25	25	100
7	Eight	Measuring efficient use of time in the course.	Percentage of lessons "not given".	25	25	25	25	100

8	Eight	Measuring efficient use of time in the course.	Timely submission of assignments.	25	25	25	25	100
9	Nine	Evaluating the programs accountability.	The number of awards, standards, prizes, etc. achieved by university within a special period of time.	25	25	25	25	100
10	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Satisfaction: Alumni, Employees, Faculty, and Students.	25	25	25	25	100
11	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Social impact: Percentage of unemployed, Average income such as, starting salaries of alums], Skills shortages and surpluses.	25	25	25	25	100
12	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Employers' satisfaction with graduates' skills.	25	25	25	25	100
13	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Graduates' employment rate, as the number of graduates who has found jobs related to their studies.	25	25	25	25	100

14	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Financial: Tuition and other revenue.	25	25	25	25	100
15	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Assessing alumni compensation and positions over the career cycle.	25	25	25	25	100
16	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Type of employers recruiting for the program.	25	25	25	25	100
17	Nine	Reviewing intended learning outcomes regularly to ensure clarity, utility, and appropriateness.	Ability to achieve on licensing boards, and standardized tests for graduates و by the percentage of graduates who can pass these tests or get the licenses.	25	25	25	25	100
18	Nine	Evaluating research outcomes	Research: published paper, Projects, PhD thesis, etc.	25	25	25	25	100
19	Nine	Evaluating research outcomes	Number of patents	25	25	25	25	100
20	Nine	Evaluating research outcomes	Number of faculties attending conferences and seminars	25	25	25	25	100

21	Nine	Evaluating research outcomes	Percentage of budget allocated to the research.	25	25	25	25	100
22	Nine	Evaluating achievements.	Students: Graduation rates, Proportion of students graduating without delay, Drop-out rates, Class repetition rates.	25	25	25	25	100
23	Nine	Evaluating achievements.	Dropout rate (number of dropouts/ number of students enrolled)	25	25	25	25	100
24	Nine	Evaluating achievements.	Graduates enrolment rate.	25	25	25	25	100
25	Nine	Evaluating achievements.	Faculty: Staff reputation, Staff turnover.	25	25	25	25	100
26	Nine	Evaluating revenues	Income generated from research projects.	25	25	25	25	100
27	Nine	Evaluating revenues	Income generated from tuition.	25	25	25	25	100
28	Nine	Evaluating library efficiency for both resources and services.	Student evaluation of library services. (by asking about: how often they could not find the resources they wanted in the library, whether the library support and training was useful or not, the library staff were well informed and were able to help and assist)	25	25	25	25	100
29	Nine	Evaluating library efficiency for both resources and services.	Number of books in the library as a portion of the number of students.	25	25	25	25	100
30	Nine	Evaluating library efficiency for both resources and services.	Number of journals and periodicals subscriptions as a portion of the number of program offered.	25	25	25	25	100

			Total for all the indicators					***3000***
			Average Points= Total Points/Number of Indicators					**100**

Final calculation:

Quality in the Institute (in the percentage form) = (*Guidelines*' Average Points *40%)+ (*Feedback* Average Points *10%) + (*Checking and Controlling* Average Points * 20%) + (*Performance Indicators and Statistical Data* Average Points *30%)

Appendix 2

Introducing the Models:

The aim of this study is to find the main indicators and suitable measurements regarding managing quality in an online university. Hereof, we need to consider a few assumptions and principles regarding the structure of an online university. First, an online university (like any other educational institution) operates based on the system concept, which means that a university contains of various interconnected components, subsystems and processes. From quality management point of view, all these parts need to work smoothly and in harmony, and a failure or a problem in one part/ component can affect all the system. Then, in an online university, the efficacy of teaching-learning process is crucial, and technology and media, associated with it, are like vehicles. Therefore, for providing the best teaching-learning environment, we need to choose the most suitable technology and media for it, and not the latest or the most advanced ones. We need to keep in mind that the priority is for supporting learning, and designing and delivering the course/s should be based on sound instructional principles and theories.

Hence, in this study for managing quality in an online university, two models are designed. One model shows the main components of a university with the relations among them in different levels, with a detailed dissuasion regarding each component's functions and responsibilities- in ***Figure 1*** you can see this model. Also, it is important to keep in mind that this model merely illustrates the essential components of a university, which can be organized in a formal organizational structure.

Evidently, from quality management point of view, the main concern is to explore how these main components in a university work properly in a harmonious way and as a whole system (which consists of various interrelated systems and processes) to provide a functioning and dynamic academic environment for students. Therefore, in this regard, a *chain process model,* which consists of various phases for providing an academic environment in an online university, is designed (See ***Figure 2***). The main purpose for designing this model is to find a way to illustrate these complex systems and processes in a simple way, and then find suitable criteria and measurements for managing quality in an online university.

The main aspect for designing this *chain process model* is the idea that this model can help us to understand what actually is happening in an online university during the process of providing an academic environment. Then, the main indicators for quality management would be defined based on these actual processes and procedures. It is vital to relate the concept of quality in education -in general- to the actual reality of what is happening within a system of creating an academic environment.

In this model, shown in ***Figure 2***, we follow two separate chain processes based on two different perspectives: one from university's management point of view (which is shown by a ***black*** line), and another one from students' viewpoint (which is shown by a ***red*** line). Also, *Nine (9) phases* in total for university's management chain process (in different levels and for various components) are defined. Besides, in each phase, different processes and tasks, which should be performed by personnel from different units and divisions, would be described, and then, the quality indicators based on these actual processes and tasks would be defined. As ***Figure 2*** shows, from management perspective, the first phase is "*Collecting data from various stakeholders*", and the last one is *"Evaluating the program"*.

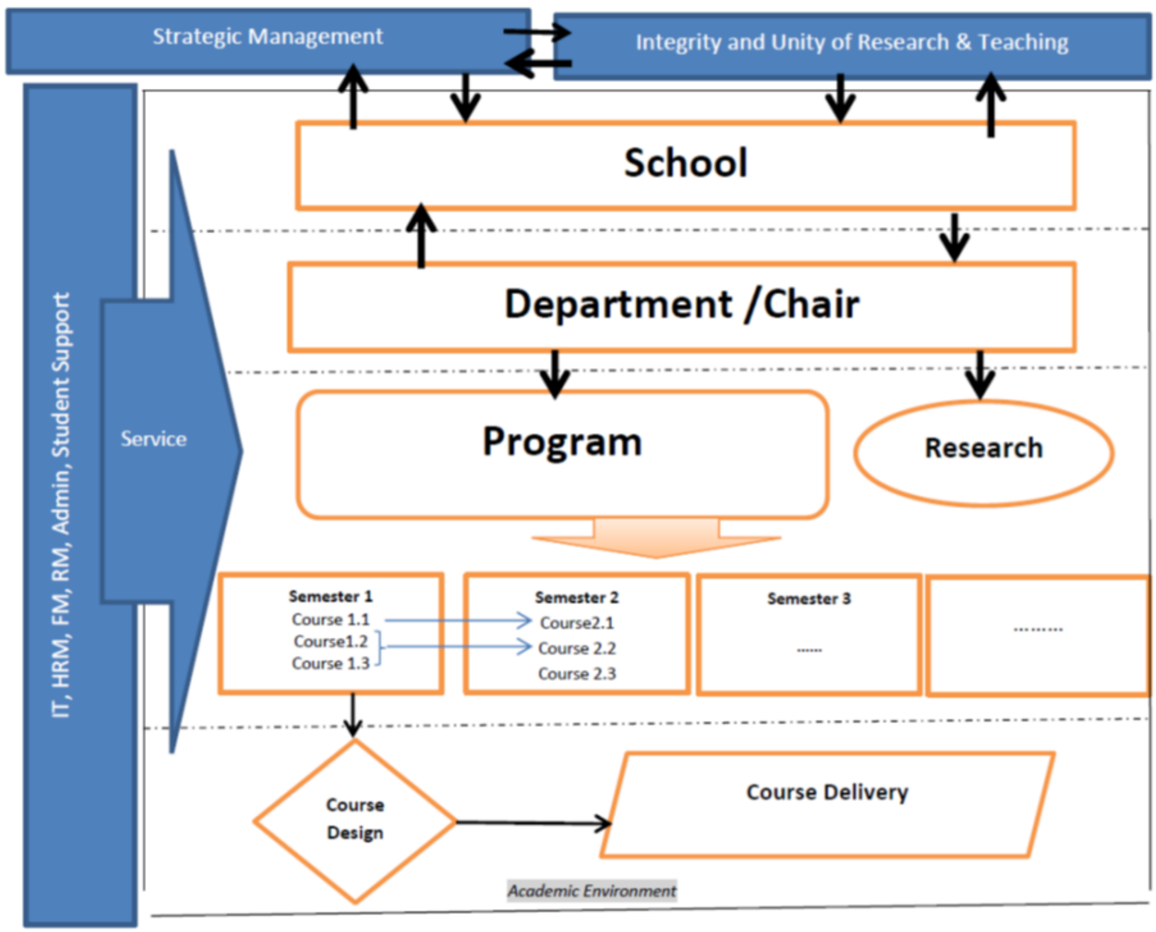

Figure 1 The main compnents of a university

Furthermore, the red line shows the main chain process for various phases from students' perspective which consists of six (6) main phases. The first phase starts when students "*send their requests and applications*" to study a program in an online university, and the last phase is "*graduation* "from the program. Also, there is a loop between *phase 6* and *phase 8* in student's chain process, which means that when a student starts a program, he/she needs to register for a few semesters, and even in each semester he/she should register for more than one course, and every student in the system should go through these 3 phases several times until the end of his/her studies and graduation. In other words, every student needs to register for various courses (here *course* is a general term, and it includes all the academic activities like seminars, projects, practicums, internships, etc.) and pass them over the time (depends on defined credits/hours, semester length, etc. in the institution). Obviously, this process of registering for one or a few courses each semester would be repeated for several times until all the requirements of the program are done, and the student is graduated.

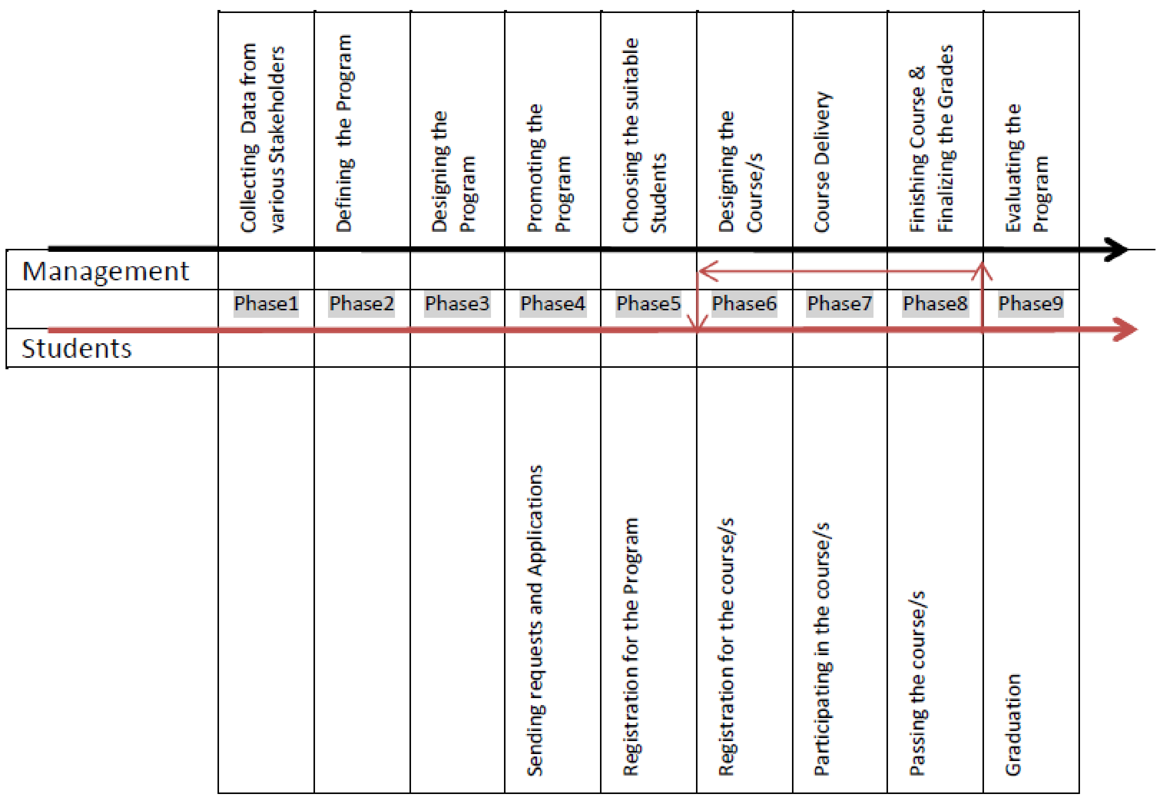

Figure 2 A chain process model for creating a teaching-learning environment in a university

The model, presented in ***Figure 2***, is based on defining and designing a new program in a university for the first time, while, a program would be delivered over and over again after it is designed initially. Therefore, after a program is designed and delivered for the first time, then, we need to use a modified chain process model. In this regard, ***Figure 3*** shows a modified model for the main *chain process model* introduced in ***Figure 2***, which is slightly different in some phases. In this modified model, the last phase, *"Evaluating the program"*, is directly related to the first phase, "*Collecting data from various stakeholders*", (which is shown by a ***black*** arrow in the model in ***Figure 3****)*. This connection means that after the program is designed, delivered and evaluated, now we have new information based on actual facts and evidences to use for having a more qualified program, along with the new information and data from various stakeholders, which can indicate changes and new needs. Therefore, by putting actual information about the program's outcomes, outputs and impacts beside new collected information and data from various stakeholders, now we need to redefine and redesign the program by making necessary changes.

Hence, *phase 2* in this modified model is "*redefining the program*" instead of "*defining the program*", in phase 3 instead of "*designing the program*" we have "*redesigning the program*", and in phase 6 instead of "*designing the course/s*", we have "*redesigning the course/s or designing new course/s*". All the changes in these phases would be based on new information and factors collected in the "*evaluation"* phase, along with new information from various stakeholders. In fact, in this way, we would have a loop of planning, designing, delivering, and evaluating, which is a systematic way for managing quality.

Surely, in this modified model, the phases for students are the same, as the whole changes would happen within the university (See ***Figure 3***).

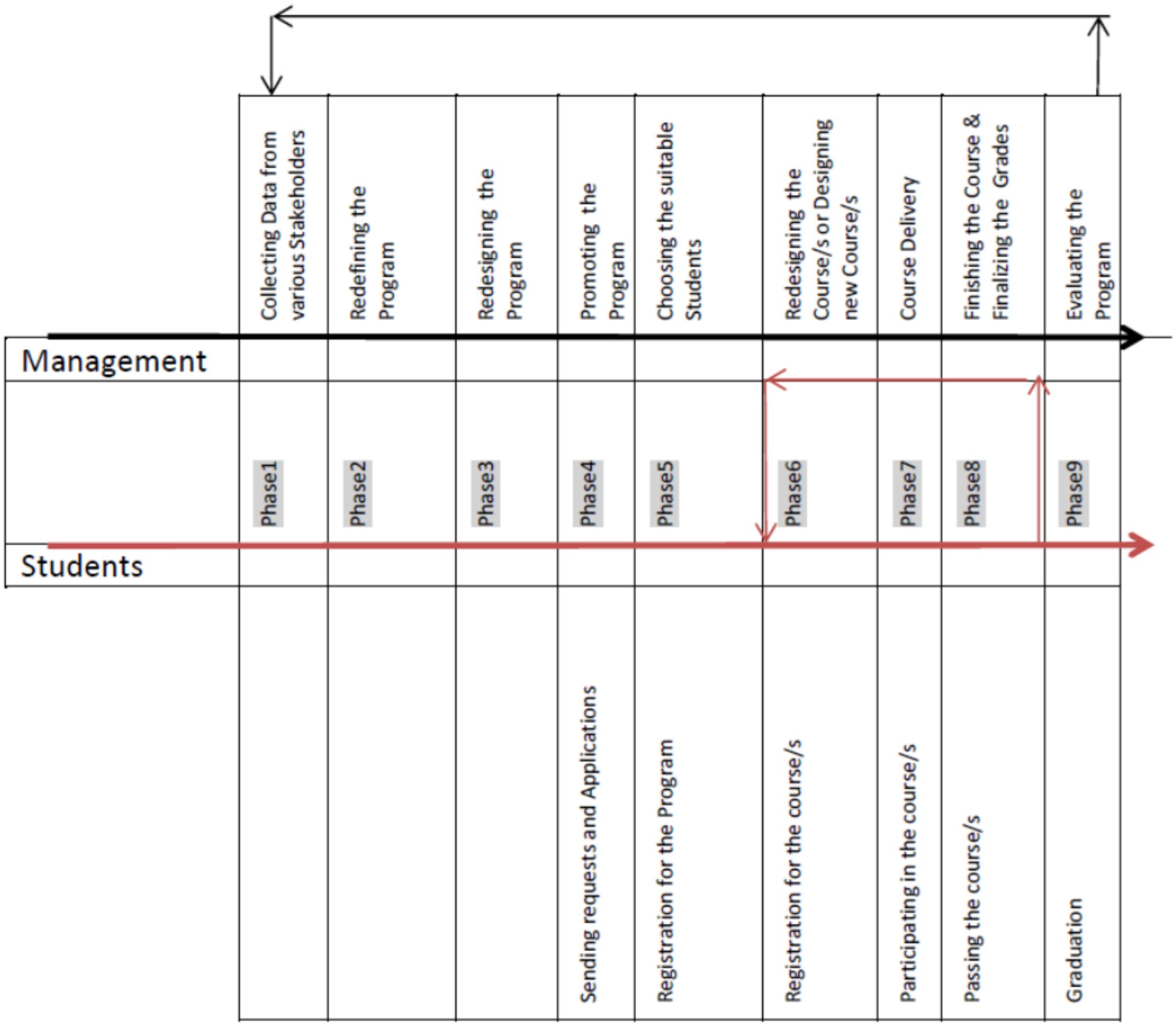

Figure 3 A modified chain process model

An important point here is that in this study the *chain process model* is introduced, mainly, for an online university, by emphasizing on the major role of technology and media in creating the teaching-learning environment, while it can be adopted for other educational systems (conventional or blended ones) as well, by making proper changes and putting less weight on technology and media's role.

Then, after defining the main indicator(s)-from quality management's perspective- for each task in each phase, finally, as the last step, a suitable measurement system for these indicators are introduced. In this regard, first, the indicators are organized and clustered in four (4) categories:

5- *Guidelines*: These indicators refer to the existence of written guidelines including standards, policies, procedures, along with a system of evaluating and updating them.
6- *Checking and controlling:* These indicators are used when we need to check and control whether that specific defined task is done on time and properly based on what was planned or not.
7- *Feedback:* The indicators in this cluster include receiving and analyzing all sorts of feedbacks from various components and stakeholders. *Note*: the existence of various feedback processes, instruments and tools, such as surveys, complaints, self-evaluation reports, site visits, etc., are a part of this category, while implementing them and being sure that they are executed properly belong to the "*checking and controlling*" category.
8- *Performance indicators and statistical data*.

Then, a system of measurements, based on the main features needed in each indicator's category, is developed, by introducing the main features for each cluster as below:

3- Guidelines:
   a. the existence of the guideline for that specific task,

   b. it is accessible for respective unit or individual,
   c. it is clear and easy to follow,
   d. it is evaluated and updated systematically based on the feedbacks or changes.

4- Checking and controlling: the task is done
   a. smoothly,
   b. promptly and on time,
   c. correctly with no failure or mistake,
   d. by appointed unit or individual.

5- Feedback:
   a. opportunities for offering feedback are given,
   b. feedback is received by responsible unit or individual,
   c. it has been analyzed along with other essential data and information,
   d. the feedback systems and processes are being updated regularly.

6- Performance indicators and data:
   a. they are defined and adequate instruments for collecting/measuring are developed,
   b. collecting procedures are defined and established,
   c. they are being compared with objectives and goals, and the acceptable rate or measurement is defined for them,
   d. they are taken for further analyses in order to improve resources and processes.

Finally, for creating a measurement system for an online university based on *the chain process model*, the weight for each cluster based on the university's priorities and strategic plan should be determined. For instance, we may decide that the total Guidelines' indicators have

40%, Feedback indicators 10%, Checking and controlling indicators 20%, and Performance indicators and statistical data 30% of our total (100%) quality measurements.

Moreover, each cluster has four (4) components, as its characteristics. Therefore, we need to define the points for each category as well; for example, in checking and controlling cluster, if a task is done smoothly gets 20 points, for being done in timely and promptly fashion 30 points, for no failure or mistake 40 points, and finally, being done by appointed personnel 10 points. Then, for each indicator we calculate the total points, and at the end we can calculate the total points for each cluster. The total points for each cluster, then, would be calculated based on the percentage defined for that specific cluster, and at the end we have a number in percentage which shows a numeral figure (as a quantity measurement) for the quality in the university.

You can find an excel file as an attachment, which shows an example of this measurement calculation based on the indicators defined in *the chain process model*. This measurement system, also, can be adopted easily for any number of indicators, along with defined weights and points decided and determined for an institute. In this study, for these nine (9) phases, in total, 109 indicators are defined.

In this point, after designing the models with indicators and measurement system, I need your view and opinion regarding whether you find this models and methods useful and applicable for a quality management system. Therefore, please, after reviewing this short explanation, models and measurement system, answer the questions in the “Questionnaire” file (which is one of the attachments). While, you can find the whole indicators in “measurement table” file, I chose 22 main indicators which are the key indicators for an online university to be evaluated by you, due to the fact that the number of indicators are too many for a questionnaire.

Appendix 3

Email:

Dear,

With warmest greetings,

As you may know, I am doing my PhD in Mannheim University in Germany, and as the final stage for finishing my thesis, I am conducting a small survey. The topic is “Quality Management in Online Universities”, and I designed two models and a measurement system in this regard.

As, you are/were involved in an online university, your opinion and view would be valuable, and I can benefit from your experience and improve my work. So, please, answer the questions in the “Questionnaire” file, and send it back by replying to this email. This takes around 20 minutes of your precious time and I really appreciate your participation. For being familiar with my work you may want to read the “Introducing the models” file, and look at “The measurement table sample” file (which is an excel file) as well.

On the questionnaire you do not need to specify your name or any personal information, you can be sure that I secure your privacy, and only use your assessment and evaluation regarding my work. Also, if you are interested, I can send a copy of my thesis when it is finished, so, you may see the results as well.

Furthermore, if you want to contact my supervisor, here is his contact information:

Professor Dr. Hermann G. Ebner
Universität Mannheim | Fakultät für Betriebswirtschaftslehre
Lehrstuhl für Wirtschaftspädagogik I

Many thanks for your participation and help

Best regards

Appendix 4

Questionnaire:

Participants' information:

1-	Please specify the university/institute you are active in.	Click here to enter text.
2-	What is your current job/ position in the university/institute?	Choose an item.
3-	If you have management responsibilities, what are they exactly? You can choose more than one.	☐ **Financial affairs** ☐ Administration affairs ☐ Academic affairs ☐ Student affairs ☐ Others - Please specify
4-	Are you involved in online teaching this year?	Choose an item.
5-	How long have you been/were involved in an online institute, either in management or teaching position?	Choose an item.
6-	Which media/medium do/did you mainly use for teaching online? You can choose more than one.	Textbook ☐ Audio/Video clips ☐ Games ☐ Podcasts ☐ Slide shows/Lecture Notes ☐ Online Quizzes ☐ Discussions ☐ Synchronous interaction (such as chats) ☐

		Wikis☐ Blogs ☐ Audio/Video Conferencing ☐ Group Activities☐ Others ☐ Please Specify:
7-	How hard is to work in an online university/institute comparing with working in a conventional/face-to-face university/institute in general?	Choose an item.

The models, indicators and measurement:

8-	In your opinion, what should be *the ideal outcomes* of having a system of collecting data and measuring the indicators for managing quality in *a university*?	
9-	In your opinion, what is the ***result* or *effect*** of collecting data and formulating the measurements *on quality* in *an online university*?	Choose an item.
10-	Do you find *the models*, presented in this study, *applicable* for an online university?	Choose an item.
11	Do you think that you can receive *useful information*, which are needed for quality management in an online university/institute, from these models and system of indicators?	Choose an item.
12-	What are the *strengths* of these models and indicators? Please specify one or two points, as the most important ones.	

13-	What are the *weaknesses* of these models? Please specify one or two points, as the most important ones.	
14-	Do you think that whether you can get more valuable results by working with *the chain process model* and its system of indicators, or not?	Choose an item.

Evaluating the Indicators:

In this part, I need your opinion regarding the defined indicators for *the chain process model*. As, for the whole model, I defined 109 indicators and cannot put all of them in the questionnaire, I chose 22 indicators- which can be regarded as the main ones for quality management in an online university-for being evaluated by the participants. The evaluation would be based on three (3) features, which means that in the indicator table, for each indicator, you are asked to determine three matters; one aspect is that if that indicator is used in the quality management system in a university or an institute that you do/did work in (which can be marked as “In Use”), the second aspect is that whether you do not find that indicator applicable for a quality management system (which would be marked as “ Not Applicable”), and the third one asks you if you find that specific indicator useful and you are able to work with it as an aspect in a quality management system (which would be marked as “Applicable & Desirable”). So, please look at the indicators in this table and give your opinion in this regard by marking the assigned boxes.

The indicator Table:

Phase 3: Designing the Program					
Task: Addressing the security and integrity of the information system in the school's technology plan.					
1	Indicator	There are guidelines and policies for ensuring security for the Information and Communication Technology (ICT).	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Providing essential trainings for faculties and teaching team members.					
2	Indicator	Instructors (or other members of teaching team) participating in mandatory trainings (either online or face-to-face) by ICT unit, administration, library, etc.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Providing a system of solving the technical problems during the "Designing the program" phase.					
3	Indicator	A system of sending notifications regarding technical problems and solving them is available and works smoothly.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Phase 6: Designing the Course					
Task: Determining appropriate faculty and staff qualification for the course.					
4	Indicator	Recruiting is based on university's policies and standards, along with the course's needs and requirements.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Providing the manuals and instruction with details for using and accessing university's website, course pages, library, student support & service, administration, etc.					
5	Indicator	There are simple and clear instructions, with descriptive detailed manuals and instructions with pictures and FAQ, while the instructions are clear, understandable, and well written without any spelling or grammar mistakes.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐

6	Indicator	These manuals are updated and available in various forms (brochures, pamphlets, files in university's web site, etc.), and students can have access to them easily.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Determining the access and authority over the providing the course content and changing it.					
7	Indicator	ICT unit follows the detailed manual for giving access and authority over the course content changes and access to the information.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Monitoring the process of course design, while being sure that process goes smoothly and within the university's and school's framework.					
8	Indicator	School and instructor/ design team follow the policies, frameworks, and standards for designing the course.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Providing essential training and information regarding how to use technology and equipment regarding designing the course for instructors and design team.					
9	Indicator	The essential information and trainings are provided at the beginning of this phase.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Developing the course page in university's website and essential links to the course materials.					
10	Indicator	The course web page is ready before starting the semester, which means that all the essential items (syllabus, study guide, professor's complete profile, course materials, etc.) are uploaded in the course page, and students can have access to them and download necessary files without any technical problem.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Phase 7: Course Delivery					
Task: Providing access to minimal technology required by the program design.					

11	Indicator	Minimal technology predicted in the course design is available.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Monitoring course activities regarding the use of technology and equipment for teaching and learning for: students & personnel & instructors.					
12	Indicator	There is a contact office/ person for answering technical question and solving technical problems 24/7, or Asynchronous access 24/7, and Synchronous access at clearly identified times.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
13	Indicator	Social contact is provided.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
14	Indicator	Quick response with acknowledgment and follow up is available, which would be a follow-through to resolution of the issue.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
15	Indicator	Access by attendants to all critical databases and expertise is provided (the personnel in any help desk can have access to the databases needed for finding the essential information).	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
16	Indicator	General information about online learning, technology requirements, with the resources available to students for technical help and for obtaining the proper software and Internet services required for the course is provided.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
17	Indicator	The linkage between different systems and databases is proper and reliable, which means that, for instance, the right students are automatically in the right course at the right time, the right student information is easily available to the appointed instructor and any other authorized person. Also, the instructor needs to be able to manipulate the students' data as needed for the course during the semester; such as, submitting and editing final marks, adding assignments' grades, contacting students as individuals, as a group or even in sub-groups, etc.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐

18	Indicator	Various units and individuals have the ability to identify problems with policies, procedures, or system, and suggest change.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Ensuring the reliability of the technology delivering system.					
19	Indicator	How many times in a semester/month webpage/email system wasn't available.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Phase 8: Finishing the Course and Finalizing Students' grades at the end of Semester					
Task: Providing support for the instructor and teaching team for designing and implementing a secure and smooth evaluation system (including online test, exams, projects, etc.) for the course.					
20	Indicator	A safe and secure system for assessment and evaluation for the course exists.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Phase 9: Evaluating the Program					
Task: Selecting various appropriate evaluation methods.					
21	Indicator	The policies, standards, and procedures for evaluating program from various perspectives exist and followed; for instance, evaluating program effectiveness by collecting and analyzing data and information regarding enrollment, costs, and successful / innovative uses of technology.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐
Task: Evaluating the strategic plan.					
22	Indicator	Comparing the objectives and goals predicted in strategic plan and in "*defining the program"* phase with real outcomes and impacts of the program at the end.	In Use ☐	Not Applicable ☐	Applicable & Desirable ☐

Appendix 5[3]

This part is a summary of the Excel spreadsheet that demonstrates the final measurement table (including the indicator table). The phases, the tasks, and the indicators are presented in part *2.2.3.4.3.* and here only the numbers and codes are presented.

The process for developing a measurement system -in the form of a measurement table- starts by, first, putting all the chosen indicators in the measurement table, and then calculating total points for each indicator (based on the assigned points for each feature). Following that, for each indicator the sum of total points should be calculated, and next, the sum of total points for each cluster can be calculated by adding all the points for each indicator. The Average Points for each cluster (Total Points/Number of Indicators) will be calculated and multiply by the assigned weight (as the percentage defined for that specific cluster), and at the end, we have **one number** in percentage which shows a numeral figure between zero (0) to one hundred (100), as a quantity measurement for quality in the university.

Followings are the tables for calculating each indicator's total points and total average points, and the final calculation shown at the end.

Quality Assurance Features:

There is a guideline, policy, standard, etc. *for conducting that specific task*, and:

1. it is approved by respective authorities, either inside or outside the university,
2. it is accessible for respective unit(s) or individual(s),

[3] **Appendix 5** is the final *measurement table* as an Excel file designed to show how the calculation for measuring quality in an online university is done. As the dissertation can be published only in PDF format, this file is modified to be included in the PDF file. The original Excel file can be received via email by contacting the author

3. it is clear and easy to follow.

Phase	Task		Quality Assurance	Feature 1	Feature 2	Feature 3	Total
1	**1,1**						
		1	**1.1. AR. 1.**	20	40	40	**100**
2	**2,1**						
		2	**2.1. AR. 2.**	20	40	40	**100**
		3	**2.1. AR. 3.**	20	40	40	**100**
	2,2						
		4	**2.2. AR. 4.**	20	40	40	**100**
3	**3,1**						
		5	**3.1. AR. 5.**	20	40	40	**100**
	3,2						
		6	**3.2. AR. 6.**	20	40	40	**100**
	3,3						
		7	**3.3. AR. 7.**	20	40	40	**100**
	3,4						
		8	**3.4. AR.8.**	20	40	40	**100**
	3,5						
		9	**3.5. AR.9**	20	40	40	**100**
	3,6						
		10	**3.6. AR.10**	20	40	40	**100**
	3,7						
		11	**3.7. AR. 11.**	20	40	40	**100**
	3,8						
		12	**3.8. AR. 12.**	20	40	40	**100**

	3,9						
		13	**3. 9. AR. 13.**	20	40	40	**100**
		14	**3.9. AR. 14.**	20	40	40	**100**
4	**4,1**						
		15	**4.1. AR. 15.**	20	40	40	**100**
	4,2						
		16	**4.2. AR. 16.**	20	40	40	**100**
5	**5,1**						
		17	**5.1. AR. 17.**	20	40	40	**100**
	5,2						
		18	**5.2. AR. 18.**	20	40	40	**100**
6	**6,1**						
		19	**6.1. AR. 19.**	20	40	40	**100**
	6,2						
		20	**6.2. AR. 20.**	20	40	40	**100**
		21	**6.2. AR. 21.**	20	40	40	**100**
	6,3						
		22	**6.3. AR. 22**	20	40	40	**100**
	6,4						
		23	**6.4. AR. 23.**	20	40	40	**100**
	6,5						
		24	**6.5. AR. 24.**	20	40	40	**100**
	6,6						
		25	**6.6. AR. 25.**	20	40	40	**100**
	6,7						
		26	**6.7. AR. 26.**	20	40	40	**100**

		27	**6.7. AR. 27.**	20	40	40	**100**
	6,8						
		28	**6.8. AR. 28.**	20	40	40	**100**
	6,9						
		29	**6.9. AR. 29.**	20	40	40	**100**
	6.10						
		30	**6.10. AR. 30.**	20	40	40	**100**
	6.11						
		31	**6.11. AR. 31.**	20	40	40	**100**
	6,12						
		32	**6.12. AR. 32.**	20	40	40	**100**
7	**7,1**						
	7,2						
	7,3						
		33	**7.3. AR. 33.**	20	40	40	**100**
	7,4						
		34	**7.4. AR. 34.**	20	40	40	**100**
	7,5						
	7,6						
		35	**7.6. AR. 35.**	20	40	40	**100**
	7,7						
		36	**7.7. AR. 36.**	20	40	40	**100**
		37	**7.7. AR. 37.**	20	40	40	**100**
	7,8						
		38	**7.8. AR. 38.**	20	40	40	**100**
	7,9						
		39	**7.9. AR. 39.**	20	40	40	**100**

	7,10						
		40	**7.10. AR. 40.**	20	40	40	**100**
	7,11						
		41	**7.11. AR. 41.**	20	40	40	**100**
8	**8,1**						
		42	**8.1. AR. 42.**	20	40	40	**100**
	8,2						
		43	**8.2. AR. 43.**	20	40	40	**100**
	8,3						
		44	**8.3. AR. 44.**	20	40	40	**100**
		45	**8.3. AR. 45.**	20	40	40	**100**
	8,4						
		46	**8.4. AR. 46.**	20	40	40	**100**
	8,5						
		47	**8.5. AR. 47.**	20	40	40	**100**
	8,6						
		48	**8.6. AR. 48.**	20	40	40	**100**
	8,7						
		49	**8.7. AR.49.**	20	40	40	**100**
	8,8						
		50	**8.8. AR. 50.**	20	40	40	**100**
	8,9						
		51	**8.9. AR. 51.**	20	40	40	**100**
	8,10						
		52	**8.10. AR. 52.**	20	40	40	**100**
9	**9,1**						
		53	**9.1. AR. 53.**	20	40	40	**100**

	9,2						
		54	**9.2. AR. 54.**	20	40	40	**100**
	9,3						
		55	**9.3. AR. 55.**	20	40	40	**100**
	9,4						
		56	**9.4. AR. 56.**	20	40	40	**100**
	9,5						
		57	**9.5. AR. 57.**	20	40	40	**100**
			Total QAR points				*5700*
			Average QAR Points= Total Points/Number of Indicators				**100**

Quality Control Features:

The task is done based on the specified requirements (including guidelines, etc.), and then, *the performance of the system* needs to be controlled by checking that the task is completed:

1. promptly and on time,
2. correctly with no failure or mistake,
3. by appointed unit(s) or individual(s).

Phase	**Task**		**Quality Control**	**Feature 1**	**Feature 2**	**Feature 3**	**Total**
1	**1,1**						
		1	**1.1. CT. 1.**	30	40	30	**100**
2	**2,1**						
		2	**2.1. CT. 2.**	40	30	30	**100**

	2,2						
		3	**2.2. CT. 3.**	40	30	30	**100**
		4	**2.2. CT. 4.**	40	30	30	**100**
3	**3,1**						
		5	**3.1. CT. 5.**	40	30	30	**100**
		6	**3.1. CT. 6.**	40	30	30	**100**
		7	**3.1. CT. 7.**	40	30	30	**100**
		8	**3.1. CT. 8.**	40	30	30	**100**
	3,2						
		9	**3.2. CT. 9.**	40	30	30	**100**
	3,3						
		10	**3.3. CT. 10.**	40	30	30	**100**
	3,4						
		11	**3.4. CT. 11.**	40	30	30	**100**
	3,5						
		12	**3.5. CT. 12.**	40	30	30	**100**
	3,6						
		13	**3.6. CT. 13.**	40	30	30	**100**
		14	**3.6. CT. 14.**	40	30	30	**100**
	3,7						
		15	**3.7. CT. 15.**	40	30	30	**100**
	3,8						
		16	**3.8. CT. 16.**	40	30	30	**100**
	3,9						
4	**4,1**						
		17	**4.1. CT. 17.**	40	30	30	**100**
	4,2						

		18	**4.2. CT. 18.**	40	30	30	**100**
5	**5,1**						
		19	**5.1. CT. 19.**	40	30	30	**100**
	5,2						
		20	**5.2. CT. 20.**	40	30	30	**100**
6	**6,1**						
		21	**6.1. CT. 21.**	40	30	30	**100**
	6,2						
		22	**6.2. CT. 22.**	40	30	30	**100**
		23	**6.2. CT. 23.**	40	30	30	**100**
	6,3						
		24	**6.3. CT. 24.**	40	30	30	**100**
	6,4						
		25	**6.4. CT. 25.**	40	30	30	**100**
		26	**6.4. CT. 26.**	40	30	30	**100**
	6,5						
		27	**6.5. CT. 27.**	40	30	30	**100**
	6,6						
		28	**6.6. CT. 28.**	40	30	30	**100**
		29	**6.6. CT. 29.**	40	30	30	**100**
	6,7						
		30	**6.7. CT. 30.**	40	30	30	**100**
		31	**6.7. CT. 31.**	40	30	30	**100**
		32	**6.7. CT. 32.**	40	30	30	**100**
	6,8						

		33	**6.8. CT. 33.**	40	30	30	**100**
	6,9						
		34	**6.9. CT. 34.**	40	30	30	**100**
		35	**6.9. CT. 35.**	40	30	30	**100**
	6.10						
		36	**6.10. CT. 36.**	40	30	30	**100**
	6.11						
		37	**6.11. CT. 37.**	40	30	30	**100**
	6,12						
		38	**6.12. CT. 38.**	40	30	30	**100**
7	**7,1**						
		39	**7.1. CT. 39.**	40	30	30	**100**
	7,2						
		40	**7.2. CT. 40.**	40	30	30	**100**
	7,3						
		41	**7.3. CT. 41.**	40	30	30	**100**
	7,4						
		42	**7.4. CT. 42.**	40	30	30	**100**
	7,5						
		43	**7.5. CT. 43.**	40	30	30	**100**
	7,6						
		44	**7.6. CT. 44.**	40	30	30	**100**
	7,7						
		45	**7.7. CT. 45.**	40	30	30	**100**
	7,8						
		46	**7.8. CT. 46.**	40	30	30	**100**
	7,9						

		47	**7.9. CT. 47.**	40	30	30	**100**
	7,10						
		48	**7.10. CT. 48.**	40	30	30	**100**
	7,11						
		49	**7.11. CT. 49.**	40	30	30	**100**
8	**8,1**						
		50	**8.1. CT. 50.**	40	30	30	**100**
		51	**8.1. CT. 51.**	40	30	30	**100**
	8,2						
		52	**8.2. CT. 52.**	40	30	30	**100**
	8,3						
		53	**8.3. CT. 53.**	40	30	30	**100**
	8,4						
		54	**8.4. CT. 54.**	40	30	30	**100**
	8,5						
		55	**8.5. CT. 55.**	40	30	30	**100**
	8,6						
		56	**8.6. CT. 56.**	40	30	30	**100**
	8,7						
		57	**8.7. CT. 57.**	40	30	30	**100**
	8,8						
		58	**8.8. CT. 58.**	40	30	30	**100**
	8,9						
		59	**8.9. CT. 59.**	40	30	30	**100**
	8,10						
		60	**8.10. CT. 60.**	40	30	30	**100**
9	**9,1**						

		61	**9.1. CT. 61.**	40	30	30	**100**
	9,2						
		62	**9.2. CT. 62.**	40	30	30	**100**
	9,3						
		63	**9.3. CT. 63.**	40	30	30	**100**
	9,4						
		64	**9.4. CT. 64.**	40	30	30	**100**
	9,5						
		65	**9.5. CT. 65.**	40	30	30	**100**
			Total QCT points				*6500*
			Average QCT Points= Total Points/Number of Indicators				**100**

Quality Assessment Features:

1. The assigned task's description (in the form of guidelines or policies, etc.) is relevant,
2. the assigned implemented instrument for undertaking the task is suitable and useful,
3. the collected information regarding the system's performance regarding the implemented task is useful for improving the usage of the resources and processes.

Phase	**Task**		**Quality Assessment**	**Feature 1**	**Feature 2**	**Feature 3**	**Total**
1	**1,1**						
		1	**1.1. AS.1.**	40	30	30	**100**
2	**2,1**						
		2	**2.1. AS.2.**	40	30	30	**100**
	2,2						
		3	**2.2. AS.3.**	40	30	30	**100**
		4	**2.2. AS.4.**	40	30	30	**100**
3	**3,1**						
		5	**3.1. AS.5.**	40	30	30	**100**
		6	**3.1. AS.6.**	40	30	30	**100**
	3,2						
	3,3						
		7	**3.3. AS.7.**	40	30	30	**100**
	3,4						
		8	**3.4. AS.8.**	40	30	30	**100**
	3,5						
		9	**3.5. AS.9.**	40	30	30	**100**
		10	**3.5. AS.10.**	40	30	30	**100**
	3,6						
		11	**3.6. AS.11.**	40	30	30	**100**
	3,7						
		12	**3.7. AS.12.**	40	30	30	**100**
	3,8						
		13	**3.8. AS.13.**	40	30	30	**100**

	3,9						
		14	**3.9. AS.14.**	40	30	30	**100**
4	**4,1**						
		15	**4.1. AS.15.**	40	30	30	**100**
	4,2						
		16	**4.2. AS.16.**	40	30	30	**100**
5	**5,1**						
		17	**5.1. AS.17.**	40	30	30	**100**
	5,2						
		18	**5.2. AS.18.**	40	30	30	**100**
6	**6,1**						
		19	**6.1. AS.19.**	40	30	30	**100**
		20	**6.1. AS.20.**	40	30	30	**100**
	6,2						
		21	**6.2. AS.21.**	40	30	30	**100**
		22	**6.2. AS.22.**	40	30	30	**100**
	6,3						
		23	**6.3. AS.23.**	40	30	30	**100**
	6,4						
		24	**6.4. AS.24.**	40	30	30	**100**
		25	**6.4. AS.25.**	40	30	30	**100**
	6,5						
		26	**6.5. AS.26.**	40	30	30	**100**
		27	**6.5. AS.27.**	40	30	30	**100**
	6,6						
		28	**6.6. AS.28.**	40	30	30	**100**
	6,7						

		29	**6.7. AS.29.**	40	30	30	**100**
	6,8						
		30	**6.8. AS.30.**	40	30	30	**100**
	6,9						
		31	**6.9. AS.31.**	40	30	30	**100**
		32	**6.9. AS.32.**	40	30	30	**100**
	6.10						
		33	**6.10. AS.33.**	40	30	30	**100**
	6.11						
		34	**6.11. AS.34.**	40	30	30	**100**
	6,12						
		35	**6.12. AS.35.**	40	30	30	**100**
7	**7,1**						
		36	**7.1. AS.36.**	40	30	30	**100**
		37	**7.1. AS.37.**	40	30	30	**100**
	7,2						
	7,3						
		38	**7.3. AS.38.**	40	30	30	**100**
	7,4						
		39	**7.4. AS.39.**	40	30	30	**100**
	7,5						
		40	**7.5. AS.40.**	40	30	30	**100**
	7,6						
		41	**7.6. AS.41.**	40	30	30	**100**
		42	**7.6. AS.42.**	40	30	30	**100**
	7,7						
		43	**7.7. AS.43.**	40	30	30	**100**

		44	**7.7. AS.44.**	40	30	30	**100**
	7,8						
		45	**7.8. AS.45.**	40	30	30	**100**
		46	**7.8. AS.46.**	40	30	30	**100**
	7,9						
		47	**7.9. AS.47.**	40	30	30	**100**
	7,10						
		48	**7.10. AS.48.**	40	30	30	**100**
	7,11						
		49	**7.11. AS.49.**	40	30	30	**100**
8	**8,1**						
		50	**8.1. AS.50.**	40	30	30	**100**
	8,2						
		51	**8.2. AS.51.**	40	30	30	**100**
	8,3						
		52	**8.3. AS.52.**	40	30	30	**100**
	8,4						
		53	**8.4. AS.53.**	40	30	30	**100**
		54	**8.4. AS.54.**	40	30	30	**100**
		55	**8.4. AS.55.**	40	30	30	**100**
	8,5						
		56	**8.5. AS.56.**	40	30	30	**100**
		57	**8.5. AS.57.**	40	30	30	**100**
	8,6						
		58	**8.6. AS.58.**	40	30	30	**100**
	8,7						
	8,8						

		59	**8.8. AS.59.**	40	30	30	**100**
		60	**8.8. AS.60.**	40	30	30	**100**
	8,9						
		61	**8.9. AS.61.**	40	30	30	**100**
		62	**8.9. AS.62.**	40	30	30	**100**
	8,10						
		63	**8.10. AS.63.**	40	30	30	**100**
9	**9,1**						
		64	**9.1. AS.64.**	40	30	30	**100**
	9,2						
		65	**9.2. AS.65.**	40	30	30	**100**
	9,3						
		66	**9.3. AS.66.**	40	30	30	**100**
	9,4						
		67	**9.4. AS.67.**	40	30	30	**100**
	9,5						
		68	**9.5. AS.68.**	40	30	30	**100**
		69	**9.5. AS.69.**	40	30	30	**100**
			Total QAS points				*6900*
			Average QAS Points= Total Points/Number of Indicators				**100**

Final calculation:

Quality in the Institute (in the percentage form) = (*Quality Assurance* Average Points*50%)+

(*Quality Control* Average Points*30%) + (*Quality Assessment* Average Points* 20%)

Curriculum Vitae

Naghmeh Naeemi Yazdi

02/2011-12/2017	***PhD in Business Administration***, (Promotion in Fakultät für Betriebswirtschaftslehre/BWL), in Mannheim University / Germany. (Dissertation Title: Quality Management in Online Universities. Studies 3 PhD courses: Fundamental of Non-Profit Management Science, Advanced Organization Theories, Corporate Governance)
09/2003 – 01/2006	***Master of Business Administration (MBA)*****.** Carleton University, Ottawa/ Canada (Studies included various courses such as: Innovation, Multivariate Statistics, Change Management, Human Resource Management (HRM), Organization Behavior (OB), Management Information System (MIS), Digital Business, Operational Management and Business Research.)
07/1990 – 02/1996	***Bachelor of Arts (B.A.) in Accounting***, Baha'i Institute of Higher Education (BIHE), Iran (Studies included various courses such as: General Accounting, Cost Accounting, Finance, Statistics, and Economics.)