

ASSESSMENT OF CURRENT RESEARCH TRENDS IN DISTANCE TEACHING & TRAINING IN THE LIGHT OF EDUCATIONAL TECHNOLOGY THEORY : A Case Study on the Arabian Gulf University Master Students` Thesis



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ABSTRACT

The present study aimed to assess research trends and orientations in distance teaching and training in the light of the educational technology theory. A number of 94 master theses carried out in the Distance Teaching and Training Program [DTTP] at the Arabian Gulf University [AGU] were surveyed. Such theses were completed by 44 male and 50 female master students between the academic years 2004/2005 and 2014/2015. Results of data analysis revealed that: out of 94 theses 37 focused on the field of learning design and training environment in general and design of instructional software in particular; 22 focused on the field of development of instructional materials; 9 focused on the field of training; 5 theses focused on the field of evaluation and one thesis focused on the field of instructional needs` assessment. Moreover, discussions of other issues addressed in the study were reported. Educational implications of this preliminary assessment were discussed.

KEYWORDS :

Research trends in distance teaching and training, educational technology theory, distance teaching and training, instructional resources, continuous assessment.

I. INTRODUCTION AND THEORETICAL BACKGROUND OF THE STUDY

Distance learning is one of the new global trends and the proposed traditional education alternatives that are based on technology and its associative tools for making education and training activities available and not restricted by time or place. Success of distance learning mainly depends on the immediate and positive interactions between the learner and the learning resources. In line with the continual calls for better educational outcomes to the extent that meet the needs of the growing demand and the labor market, distance teaching and training based on the systematic approach and scientific research findings has been viewed as a fundamental requirement for people working in the field. According to Albert, Michelle, Patryce, and Ann (2010), the field of distance education has grown from correspondence courses to podcasts and virtual classrooms in fewer than 20 years.

Keegan (1986) identified five main elements of the distance education concept and used them to compose a comprehensive definition of distance education:

1. The quasi-permanent separation of teacher and learner throughout the length of the learning process, which distinguishes distance education from conventional face-to-face education.
2. The influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services.
3. The use of technical media-print, audio, video or computer to unite teacher and learner and carry the content of the course.
4. 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),
5. 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. Included is the possibility of occasional meetings for both didactic and socialization purposes.

Distance education, as a structured learning in which students and instructor are separated by place and sometimes by time, is currently the fastest growing form of domestic and international education. Distance education can be defined as an institution-based formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors. Any distance learning activity is not possible without distance teaching. According to the Association for Educational Communications and Technology [AECT] (2005), the main components of distance education can be shown in figure 1 below.

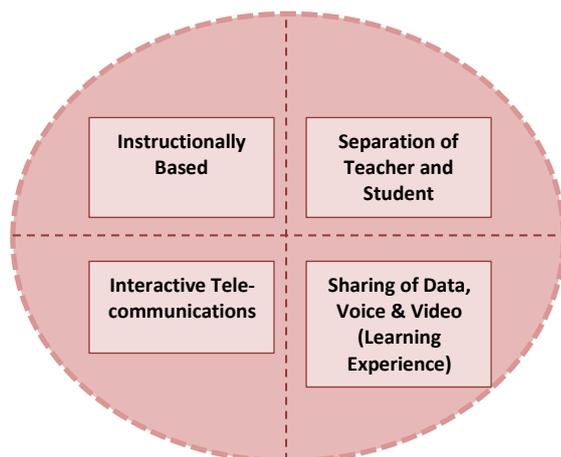


Figure 1: The four main components to the definition of distance education

The related research literature is being produced at a very rapid rate, yet the empirical characterization of the field and its evolution is lacking. The purpose of the present study is to explore the current research trends in distance teaching and training in the light of the educational technology theory, and then apply the content analysis to assess the AGU distance teaching and training program master students' theses carried out during the academic years 2004/2005 and 2014/2015 based on the domain of research in educational technology proposed by AECT and the professionals in the field of distance education.

Arabian Gulf University's distance teaching and training post graduate program is an academic, research program established in the academic year 2004/2005 in collaboration with Sunderland University in the United Kingdom (AGU, 2005). The program is considered as a pioneer and a distinct program in distance teaching and training field as it aims to prepare the human resources to guide the professional development and continuous learning based on the regional and international distance teaching and learning standards. The program is a research and referential structure in the field of e-Learning and Training. It also an attempt to raise the standards of preparing of the specialists in the academic and research domains at both the individual and the institutional levels (AGU, 2005).

The main goal of the program is to develop the human abilities and powers to develop academic and research structures that form a reference in the theoretical and application fields of distance teaching and training to serve the educational and training development plans locally and regionally. The program endorses two degrees; graduate diploma in distance teaching & training, and master degree in distance teaching & training. The next few paragraphs will present detailed description of these programs.

II. EDUCATIONAL TECHNOLOGY : THEORY AND DOMAINS

The field interested in research in technology utilization for educational purposes is known as educational technology. In order to help in taking hold of the diagnosis for the integration of instructional technology into education and training, one needs to consider the promises and challenges ahead of such an enterprise.

As the leading organization in the field, the AECT has defined and redefined the field over the years to respond to the changes in emerging technologies, theories and functions of instructional technology professionals in the field. The present study mainly builds into the 1977 and 1994 definition of the field generated by AECT. In 1977, AECT defined educational technology as a complex, integrated process involving people, procedures, ideas, devices and organization for analyzing problems and devising, implementing, evaluating and managing solutions to those problems involved in all aspects of human learning. In educational technology, the solutions to problems take the form of all the learning resources that are designed and/or selected and/or utilized to bring about learning; these resources are identified as messages, people, materials, devices, techniques, and settings.

Educational technology nominated the proposed solutions for the educational or training problems as learning resources. Learning resources (AECT, 1977) is a term that refers to all of the resources (data, people, and things) which may be used by the learner in isolation or in combination, usually in an informal manner, to facilitate learning; they include messages, people, materials, devices, techniques, and settings. There are two types(a) resources by design those resources which have been specifically developed as "instructional system components" in order to facilitate purposive, formal learning, and (b) resources by utilization those resources which have not specifically been designed for instruction but which can be discovered, applied, and used for learning purposes.

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In 1994, AECT defined the field as; Instructional Technology is the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning (Seels & Richey, 1994). The domains in this definition were listed because they include areas of concern to practitioners and scholars; they are a result of previous definitions trying to list the different roles and components of instructional technology. Each of the components and roles is classified into one of the five domains of instructional technology (figure2).

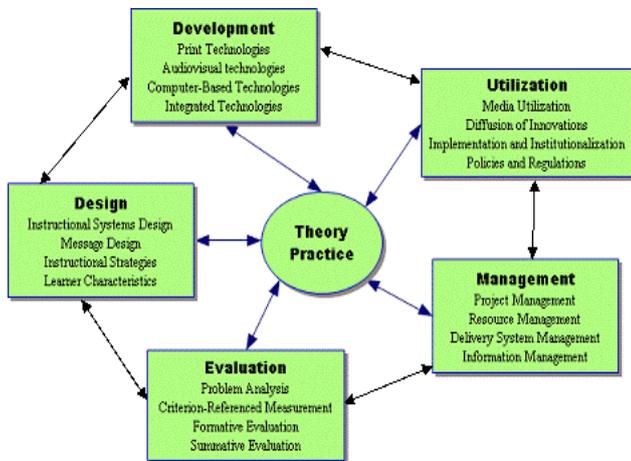


Figure 2: The 1994 domains of instructional technology and the relationship between domains

Each domain in the field contributes to the theory and practice which is the basis for the profession. There is no linear relationship between the domains (figure 3). The 1994’s definition of instructional technology highlights the relationship of domains of the field to theory and practice. The following paragraphs will explain the components of the definition and describe what professionals in this field do and study.

The theory and practice: a theory consists of the concepts, constructs, principles, and propositions that contribute to the body of knowledge. Practice is the application of that knowledge to solve problems. Practice can also contribute to the knowledge base through information gained from experience. Both theory and practice in instructional technology make extensive use of models. Procedural models, which describe how to perform a task, help to connect theory and practice. Theory can also generate new models that facilitate visualization of relationships.

Of design, development, utilization, management, and evaluation: these terms refer to both areas of the knowledge base and to functions performed by professionals in the field. They are the five basic domains of instructional technology.

Of processes and resources: a process is a series of operations or activities directed towards a particular result. In Instructional technology, there are both design and delivery processes. A process implies a sequence involving input, actions, and output. Resources here refer to the sources of support for learning, including support systems and instructional materials and environments.

For learning: the purpose of instructional technology is to affect and effect learning. The phrase was chosen to emphasize learning outcomes and clarify that learning is the goal and that instruction is a means for learning. Learning, as evidenced by a change in knowledge, skills or attitudes, is the criterion for instruction.

2.1 Domains of Instructional Technology

The 1994 definition of the field is built around five separate areas of concern to instructional technologists. These are Design, Development, Utilization, Management, and Evaluation.

The Domain of Design: Design is the process of specifying conditions for learning. The purpose of design is to create strategies and products at the macro level, such as programs and curricula, and at the micro level, such as lessons and modules. The design domain includes the study of instructional systems design, message design, instructional strategies and learner characteristics. Trends and issues in the design domain cluster around the use of traditional instructional systems design (ISD) models, the application of learning theory to design, and the impact of the new technologies on the design process.

The Domain of Development: The development is the process of translating the design specifications into physical form. The development domain encompasses the wide variety of technologies employed in instruction. It is not, however, isolated from the theory and practice related to learning and design. The roots of the development domain are in the area of media production, and through the years changes in media, capabilities have led to changes in the domain. The development domain was organized into four categories: print technologies, audiovisual technologies, computer-based technologies, and integrated technologies. The audio-visual technologies followed as ways to utilize mechanical and electronic invention; within an educational setting.

The Domain of Utilization: Utilization refers to the integration of the innovation within the structure of the organization. Utilization may have the longest heritage of any of the domains of Instructional Technology, in that the regular use of audiovisual materials predates the widespread concern for the systematic design and production of instructional media. The domain of utilization began with the visual education movement which flourished during the first decade of this century when school museums were established. The four subcategories in the domain of utilization are media utilization, diffusion of innovations, implementation, and institutionalization, and policies and regulations.

The Domain of Management: Management involves controlling instructional technology through planning, organizing, coordinating and supervising. As practice in the field became more sophisticated, general management theory was applied and adapted. The area of information management has great potential for the field. One theoretical base for information management comes from the discipline of information and communication sciences. Other bases are emerging from practice in the integrated technologies area of the development domain and from the field of library science. There are four subcategories of the management domain: project management, resource management, delivery system management and information management. Within each of these sub-categories there is a common set of tasks that must be accomplished. Organization must be assured, personnel hired and supervised, funds planned and accounted for, and facilities developed and maintained.

The Domain of Evaluation: Evaluation is the process of determining the adequacy of instruction and learning. Evaluation begins with problem analysis. In the domain of evaluation, important distinctions should be made between program, project and product evaluations; each is an important type of evaluation for the instructional designer, as are the formative and summative evaluation. Within the domain of evaluation, there are four sub-domains: problem analysis, criterion-referenced measurement, and formative and summative evaluation.

III. RESEARCH IN EDUCATIONAL TECHNOLOGY AND DISTANCE EDUCATION

Educational technology research has passed through a number of stages, focusing, in turn, on the content to be

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learned, the format of instructional messages, and the interaction between computers and students. The field is now concerned with the study of learning in complete, complex, and interactive learning environments. These environments allow both the simulation of experiences that students might have in the real world and also the creation of compelling experiences that cannot normally be experienced directly. Mihalca and Miclea (2007) reviewed the research in technology-based learning environments in order to give both a historical perspective on educational technology research and a view of the current state of this discipline. They concluded that: (1) trends in educational technology research were forged by the evolution of learning theories and the technological changes, (2) a clear shift from the design of instruction to the design of learning environments can be noticed; (3) there is a positive effect of educational technology on learning, but the size of the effect varies considerably; (4) learning is much more dependent on the activity of the learner than on the quantity of information and processing opportunities provided by the environment.

Hafize and Deniz (2009) reported on a study aimed to determine the current trends in educational technologies studies presented in World Conference on Educational Sciences in 2009 and 2010 years. Content analysis is applied to collect the data. Around 503 articles presented in World Conference of Educational Sciences 2010, and 993 articles presented in World Conference of Educational Sciences 2010, and published in Procedia-Social and Behavioral Sciences by Elsevier Publication and are also indexed by Scopus and Science Direct and Thomson Reuters Conference Proceedings Citation Index-Science are examined, and totally 97 articles in the field of educational technologies are analyzed in terms of their formats, content, and methodologies. They concluded that development of educational technologies has revealed new concepts in education like distance-learning, e-learning, and mobile learning.

Ali and his colleagues (2009) examined 259 master's theses in the field of educational technology completed in Turkey during 2000-2007. Results of their examination suggested that quantity and quality of educational technology research varied according to years and universities. A significant majority of the theses employed descriptive statistical techniques and only a limited number of experimental theses conducted inferential statistical analyses. The most frequently investigated topics were computer-assisted instruction, alternative teaching and learning approaches, web-based learning, difficulties in integrating information technologies into educational practice, Internet-based learning, and distance education

Olaf (2009) reported on a study aimed at (a) developing a categorization of research areas in distance education, (b) identifying the most important research areas in distance education; and (c) identifying the most neglected research areas in distance education. Based on a literature review and a Delphi study, three broad levels or perspectives with 15 research areas were derived to contribute in organizing the body of knowledge in distance education. . The study listed eight broad groupings of research areas that require priority attention: instructional and communications technology; industrial and business training context; the role of distance education in national development; student support services; evaluation; equity and access; design and development of study materials; and interactive multimedia.

Steven, Gary, and Deborah (2010) examined the past and present research trends, with emphasis on the role and contribution of research evidence for informing instructional practices and policies to improve learning in schools. Specific topics addressed include: (a) varied conceptions of "effective" technology uses in classroom instruction as topics for research, (b) historical trends in research approaches and topics of inquiry;

(c) alternative research designs for balancing internal (rigor) and external (relevance) validity; and (d) suggested directions for future research. Attention is devoted to describing varied experimental designs as options for achieving appropriate rigor and relevance of research evidence and using mixed-methods research for investigating and understanding technology applications in complex real-life settings.

Bozkaya, Aydin, and Kumtepe (2012) evaluated the contents of articles published in the Turkish Online Journal of Educational Technology (TOJET) between 2008 and 2011. The general aim of their work is to review on what trends, issues and research methods on which studies of educational technology have concentrated in the last four years. Published articles have been analyzed under titles of (a) general characteristics of studies; (b) research themes and issues; and (c) research design. A total of 273 articles were reviewed. Results revealed that researchers often used Surveys/Questionnaires as data collection tools in studies published between 2008 and 2011 in the Turkish Online Journal of Educational Technology.

Chris (2014) mentioned that there are 10 major technology trends in education, his trends included; personal access to mobile devices, internet connectivity, use of video for class-work and homework, mobile devices for schoolwork, using different tools for different tasks, paying attention to the digital footprint, an increased interest in online learning, gaming is growing, and the gender gap is closed, social media in schools and what devices belong in the ultimate school.

The practice of homeschooling still receives contrasting responses on its relevancy and effectiveness. Jamaludin, Alias, and DeWitt (2015) mapped the trends in the selected eleven studies from various educational journals. The analysis focuses on mapping the trends on (a) research settings, (b) target sample, (c) method or instrument used, (d) common focus or issues covered, and (e) pattern in the findings of all selected studies. It was found that majority of the current studies were more focusing in evaluating the effectiveness and relevancy of homeschooling as an alternative to traditional schooling, especially in the area of effective learning experiences and healthy social development.

There has been wide academic and research interest in the application of Social Media (SM) modalities, as instructional tools in Contemporary educational settings. Piotrowski (2015) conducted a study that was design to address both these issues. First, the current analysis attempts to gauge the scope of the research domain of SM-education typology by conducting a content analysis of dissertation research in this area. Second, a subset of these studies, with a focus on the empirical outcome, on the efficacy of SM in educational settings was examined. A keyword search of the term (Social Media) yielded 662 studies represented in ProQuest's Dissertations & Theses database. Based on the abstract of each study, the author tagged the reference with a descriptor that best represented the main topical focus of the research. The topical areas that garnered the most research attention, within the domain of SM, were (in rank order): political issues/social movements, marketing/business performance, and college-level educational issues. In total, educational applications of SM accounted for 12% of this dissertation sample. . The author summarized the major outcome findings of 29 dissertations that had a specific focus on "SM-Education" issues. Of these, only 2 studies reported any negative views by either students or faculty on the implementation of SM platforms for academic purposes. Instructors' lack of efficacy in Web 2.0 technology, privacy issues, and data overload were the major concerns noted. As these results are based on areas of investigatory interest of young researchers, the current findings provide a barometer of emerging trends regarding critical issues in "Social Media-Education" research.

In 2016, Damewood reported on research focused on how technology in use changes over time, and the current trend of simulation technology as a supported classroom technology. Simulation-based training as a learning tool is discussed within the context of adult learning theories, as is the technology used and how today's higher education technology administrators' support that technology. Examples are given from a major land-grant university and the College of Nursing where the author is the Information Technology (IT) Director and one of two employees designated to support technology there. In a similar study, Pinkwart (2016) analyzed some current trends and future developments in computer science, education, and educational technology. Based on these trends, two possible future predictions of Artificial Intelligence in Education (AIED) are presented in the form of a utopian vision and a dystopian vision. A comparison of these two visions leads to seven challenges that AIED might have to face in the future: intercultural and global dimensions, practical impact, privacy, interaction methods, collaboration at scale, effectiveness in multiple domains, and the role of AIED in educational technology.

Reeves and Oh (2017) presented an analysis of educational technology research with specific emphasis on determining how the research goals pursued and methods used have evolved over the 25-year period from 1989 through 2014. They analyzed the contents of the "Educational Technology Research and Development" journal over two six-year periods, first from 1989 to 1994 and second from 2009 to 2014, to identify the goals and methods of the studies specifically designated in the journal as "research papers. Results indicated trends in the goals and methods employed in educational technology research that has implications for future research directions as well as for the preparation of graduate students and early career scholars to conduct educational technology research.

Doug (2017) summarized the key trends for 2017 innovation in educational technology in the following points; investment in educational technologies continues to increase, the ubiquity of learning libraries, adopting campaign marketing to enhance learner engagement, adaptive learning, burst training campaigns growing for sourcing engagements, shifting to a culture of coaching, evolution of gaming theory and mechanics, smaller class sizes, and in sourced spend increasing. Areas of research in distance education driven from Educational Technology theory and review of the related literature can be summarized as followed: trends and issues in the design domain cluster around the use of traditional instructional systems design (ISD) models, the application of learning theory to design, and the impact of the new technologies in the design process.

Research in the development domain can be organized into four categories: print technologies, audiovisual technologies, computer-based technologies, and; integrated technologies. Trends and issues in the print technologies and audiovisual technologies include increased attention to text design and visual complexity. Trends and issues in the computer-based technologies and integrated technologies areas of the development domain relate to design challenges for interactive technologies, application of constructivist and social learning theory, expert systems and automated development tools, and applications for distance learning.

Trends and issues in the utilization domain often center on policies and regulations which affect use, diffusion, implementation, and Vinstitutionalization. Another issue associated with this domain is how the influence of the school restructuring movement might affect the use of instructional resources.

There are four subcategories of the management domain: project management, resource management, delivery system management and; information management. The trend towards quality improvement and quality management that is seen in industrial settings is likely to spread to educational settings. If so, it will have an influence on the management domain.

Within the domain of evaluation, there are four sub domains: problem analysis, criterion-referenced measurement, formative and, summative evaluation. Needs assessment and other types of front end analyses have been primarily behavioral in orientation through their emphasis on performance data and on breaking content down into its component parts. However, current stress on the impact of context on learning is giving a cognitive, and at times a constructivist, orientation to the needs assessment process

The five domains of Educational Technology highlight the diversity of the field. Each domain contributes to other domains and to research and theory that is shared by the domains. An example of a shared theory is the theory of feedback which is used in some way by each of the domains. Feedback can be included in both an instructional strategy and a message design. Feedback loops are used in management systems, and evaluation provides feedback. Research in distance education can be classified within the main domain and their sub-categories.

Research in distance teaching and training at AGU is also governed by program research development plan approved in 2011 (AGU-Distance Teaching and Training Program, 2011). The following core areas of research are guided by the systems theory, learning theories and instructional models that are appropriate to the field of distance teaching and training. They will be the millstone of current research development plan.

1. Designing, developing and evaluating effective e-learning and training materials, programs and virtual environments.
2. Designing, developing, evaluating and managing effective online, hybrid and web based courses.
3. Applying and evaluating pedagogical theories and models in the field of e-learning and training.
4. Evaluating e-learning and training systems and projects management.
5. Designing, developing or proposing e-learning and training framework or solutions for learners with special needs.
6. Investigating instructional systems design implications for e-learning specialists or developers of e-learning media and materials.
7. Designing, developing and evaluating e-learning professional development programs for public and private educational institutions.
8. Designing, developing and evaluating e-courses and curricular materials for all educational stages.
9. Exploring new trends, innovations and proposed solutions to problems in the field of e-learning.

3.1 Problem of the study

From their experiences as teaching staff, supervisors and internal examiners, the researchers noticed that students' thesis topics did not cover all fields of research practiced within the domains of instructional technology and issues referred to by many previous research and studies in the field. It was also noticed that students' research focused on some areas (domains) and neglected other areas that may have been important for investigation because they were of interest to the community in the region. As such, researchers felt that: there was a need to explore the current trends of research in distance

teaching and training based on the educational technology theory in order to assess AGU distance teaching and training program master theses within the current international trends of research in distance education and educational technology.

Thus, the current study will explore and discuss the theoretical foundations underpinning the research trends in distance teaching and training in the light of the educational technology theory through the preliminary assessment of the master theses done by the students during the period 2004/2005 until 2014/2015 and discuss some of the indicators that could be included in the AGU- distance teaching and training program research for the coming years, which can serve the community of the Gulf region and contribute to the scientific and practical solutions for the educational and training problems in accordance with the global trends of the field.

3.2 Objectives of the study:

In this study, researchers sought to achieve the following objectives:

1. Discuss the educational technology as the theory adopted for developing such learning and training program and its relevance to current research trends in the field.
- 2.
3. Evaluate the research projects carried out by DTTP master students in the light of research areas addressed in the field of educational technology and distance education.
- 4.
5. Propose some relevant recommendations for the distance teaching and training programs to enrich the knowledge base of the field and benefit researchers and practitioners in it.
- 6.
7. Assess the position of the AGU research in distance learning with reference to the global research trends in the field.

3.3 Questions of the Study:

In this study, researchers sought to answer the following main question:

What was the distribution of research topics of the master theses in distance teaching and training at the AGU in the light of the educational technology theory?

The following sub - questions were derived from the main question:

1. What were the classifications of the research trends in distance teaching and training according to the domains of the educational technology theory?
2. What was the distribution of DTTP master theses topics according to the classification of research trends in educational technology during the period of 2004/2005 to 2014/2015?
3. How DTTP faculty evaluate the practice of scientific research in the distance education and training program?

3.4 The significance of the study:

The significance of present study stems from the following considerations.

1. Assessment of the outcomes of the DDTP students' master theses research endeavors.
2. Enrichment of the theory and practice of distance education and educational technology.
3. Motivating AGU faculty members and their students to carry out research based on theory and practice of educational technology.

3.5 Limitation of the study:

The topic of this study was limited to the master theses completed by the DTTP students during the period 2004/2005 to 2014/2015. Possible generalization of the results is limited to number theses explored.

3.6 Definitions of terms:

Arabian Gulf University-AGU: It is a regional Gulf University located in Bahrain, funded and administrated by the Gulf Cooperation Council (GCC) countries. AGU looks forward to undertaking its role in addressing the developmental issues of the GCC countries through its innovative and effective educational and research programs with relevance to Arabian Gulf regional issues and aspires to gain an eminent international reputation.

Distance Teaching and Training Program at AGU: A graduate program leading to post graduate diploma and master degree in distance teaching and training. The establishment of the program goes back to the first semester of the academic year 2004/2005 when Arabian Gulf University established the program in collaboration with Sunderland University (UK).

Educational Technology as a Theory: Educational Technology as a theory refers to the use of the theory and practice of design, development, utilization, management, and evaluation of processes and resources to solve problems related to all aspects of human learning through complex, interrelated processes.

Research Trends: Research trends in this study refers to the patterns of gradual change in research topics, conditions, outputs, or processes, or an average or general tendency of a series of data points to move in a certain direction over time.

IV. METHODS AND PROCEDURES

4.1 Method:

The study was designed to combine the descriptive approach with content analysis approach in order to obtain data needed to answer the study questions. The study was conducted using a descriptive research methodology for reviewing the research practices at the AGU distance teaching and training program master theses completed by the students. Strengths and weaknesses of these practices were also assessed by a questionnaire distributed to DTTP faculty members who participated in supervising and evaluating the students' theses as internal examiners. They were asked to offer suggestions for improving the scientific research practice of the program in the future.

The study also analyzed the content of the students' master theses during the time limit nominated in the study i.e.(2005-2015), based on the known research fields and trends driven by the educational technology theory, distance education, previous studies in the field, and type of study in terms of being a survey, experimental or developmental research. In addition to classifying context and place, the educational stage in which the study was utilized, the dependent and independent variables of the study were investigated.

4.2 Population and Sample of the Study:

The study population was composed of all students who have completed masters' degree in DTT from the AGU during the academic years 2004/2005 to 2014/2015. The sample of the study consisted of 94 students who completed their master degrees in DTT during the academic years 2004/2005 to 2014/2015. Around 44 theses representing (46.8%) were male compared to 50 females (53.2%), distributed among the five GCC countries in addition to 2 students from Arab countries (Egypt and Jordan). Students from the State of Kuwait were 51 representing 54.3%, students from Saudi Arabia were 26 (27.7%), students from Bahrain were 14(14.9%), and one candidate from Sultanate of Oman.

4.3 Instruments:

The instruments used to collect needed data in this study included the following:

1. DTTP students’ records and their master theses completed during the academic years (2004/2005 to 2014/2015).
2. Classification of research areas in distance teaching and training as defined in the definition of educational technology 1994, in addition to the field of training; so that the total is (6) domains representing the main areas of research in distance teaching and training.
3. DTTP students’ thesis abstracts (AGU, 2012).
4. A questionnaire filled in by DTTP faculty members about their assessment of research topics and current orientations and/or trends in the field of DTT.

4.4 Statistical Methods:

Collected data were treated by the computer Statistical Package for Social Sciences SPSS-Version 19. Frequencies and percentages were computed; the percentage of each research variables was calculated. The study also used qualitative analysis techniques to analyze data obtained from the DTTP faculty members about student theses and research projects carried out by the program.

V. RESULTS AND DISCUSSION

5.1 Results related to question one: What were the theoretical foundations (theories and models) of the AGU distance teaching and training program?

Keegan (1995) defined theory as “something that eventually can be reduced to a phrase, a sentence, or a paragraph and which, while subsuming all the practical research, gives the foundation on which the structures of need, purpose, and administration can be erected”. Garrison (2000) stated that a theory provides people with an explanation to make sense of complex practices and phenomena, and can provide a perspective that reduces complexity while suggesting generalization. Garrison (2000) added; a meaningful and relevant theory is essential to the vitality and influence of any field of practice - distance education is no exception.

Instructional Technology has been influenced by theory from several areas. Intellectual roots of instructional technology are often found in other disciplines, including psychology; engineering; communications; computer science; business; and education, in general. While research and theory are used by instructional technologists to guide much of their work, it is common for general principles to be translated into the form of models which summarize recommended procedures (AECT, 1994).

AGU Distance Teaching and Training Program makes use of all accepted theories and models of education and instructional design that fit for designing, developing, utilizing, managing and evaluating distance education activities and processes. These included, but not limited to behavioural theories of learning, cognitive theories, constructivism theories, connectivism as a learning theory for the digital age (Simens, 2005), the general instructional design model ADDIE ID Model (Prestera, 2004), ASSURE Model (Heinich, Molenda, and Russell, 1982), Dick & Carey ID Model(2004), Keller’s Motivational Design Model(Keller, 1999), Gagne events of instruction(Gagné, 1985),and computer mediated communication

model (CMC). In addition to all theories of independence and autonomy, theories of industrialization of teaching and theories of interaction and communication (Keegan, 1986), that underpin distance education such as; (a) Theory of Independent Study (Simonson, Smaldino, Albright, and Zvacek ,2003), (b) Theory of Independent Study (Moore, 1994), (c) Theory of Industrialization of teaching (Otto Peters, 1988), (d) Theory of Interaction and Communication (Holmberg, 1995), and (e) Theory of Andragogy (Knowles,1990).

The theoretical foundations of a field describe and inform the practice and provide the primary means to guide future developments. Educational technology as in the present study (the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning); represents the main theoretical foundation of the field, which educational and training theories were used within the concept of educational technology when creating solutions for educational/training problem.

Educational technology is the field of study that analyses the use of technology in education. The findings of the field are directed primarily at schools, colleges, and universities, but are of central interest to distance systems as well because of the crucial importance of technology in these systems (Keegan, 1995).

5.2 Results related to question two: What were the classifications research trends in distance teaching and training according to the domains of educational technology theory?

Barring in mind that Instructional Technology is the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning (AECT, 1994); research areas in the field can be summarized as follows:

Research in the design domain includes the study of instructional systems design, message design, instructional strategies and; learner characteristics. Research in the development domain can be organized into four categories: print technologies, audiovisual technologies, computer-based technologies, and; integrated technologies.

The four subcategories in the domain of utilization are media utilization, diffusion of innovations, implementation, and institutionalization, and policies and regulations. Also, there are four subcategories of the management research areas: project management, resource management, delivery system management and; information management.

Within the domain of evaluation, there are four sub domains of research: problem analysis, criterion-referenced measurement, formative and summative evaluation.

Each domain contributes to the other domains and to research and theory that is shared by the domains. Any research activity in the field of distance teaching and training can be classified within the main domain and their sub-categories.

4.3 Results related to question three: What were the most frequent areas of research among DTTP students theses?

To answer this question, the areas of research in distance learning and training were categorized according to the components and domains of the educational technology, which included (needs assessment, design, development, use and utilization, management, and evaluation) and added training as a sixth field. Table 1 presents the distribution of students’ research according to the field of research.

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Table 1: Distribution of the students' research according to the field of research

Research Domain	Frequency	Percent	Valid Percent
Needs assessment	1	1.06	1.06
Design	37	39.36	39.36
Development	20	21.28	21.28
Utilization	22	23.40	23.40
Evaluation	5	5.32	5.32
Training	9	9.57	9.57
Total	94	100.0	100.0

From table (1), it is noticed that most of the theses were conducted in the design domain i.e. around 37 theses (39.39%), about 22 theses (23.40%) in the field of utilization, and 20 theses (21.28%) in the field of development, 9 theses (9.6%) in the field of training, 5 theses (5.3%) in the field of evaluation, and one thesis in the field needs assessment which presented as an evaluation research.

The study used another classification based on the independent variables of the research included in the thesis title and headings. This includes blended learning, learning activities, e-learning, mobile learning, teaching methods, distance learning, learning and training methods, and virtual learning environments VLEs. Table 2 presents a summary of the independent variables classification reported in DTTP students' research.

Table 2: Classification of DTTP theses based on the independent research variables

Independent variable	Frequency	Percent	Valid Percent
Blended learning	22	23.40	23.40
Learning activities	6	6.38	6.38
e-learning	44	46.81	46.81
Mobile learning	1	1.06	1.06
Teaching method	5	5.32	5.32
Learning and training method	3	3.19	3.19
Distance education	2	2.13	2.13
VLEs	11	11.70	11.70
Total	94	100.0	100.0

From the above table, it is noted that: the term e-learning as an independent research variable within the various domains of DTTP students' research was repeated in 44 theses i.e. (46.81%), followed by blended learning which appeared in 22 theses (23.40%), then the virtual learning environments mentioned in 11 theses (11.70), followed by learning activities in 6 theses (6.38%), teaching methods came in 5 theses (5.32%), learning and training methods appeared in 3 theses (3.19%), and mobile learning as a new area of research appeared once.

In terms of research method classification, descriptive research was adopted in 10 theses (10.64%), while experimental research approach was used in 84 theses 89.36%. This might represent an indicator of the program's interest in linking theory with its real applications in the field of distance teaching and training.

1.1.1 What is the context and scope of utilization?

The context of the research utilization was classified according to the educational stage covering: the primary stage, the intermediate stage, the secondary stage, the undergraduate and graduate level, the training, and the faculty members. Results of the analysis revealed that the highest rate of application was done at the university level. A total of 61 (64.89%) from the 94 studies were carried out at the university level. Sixteen (17.02%) of the studies were done in the field of training, 10 of the studies were carried in the secondary education(10.64%), 5 studies(5.32%) on primary school students, in addition to only two studies implemented in the intermediate stage (2.13%).

Table 3 shows the distribution of studies according to the educational stage in which the study was implemented.

Table (3): Distribution of studies according to the educational stage and utilization context

Research Context	Frequency	Percent	Valid Percent
Basic Education	5	5.32	5.32
Intermediate Education	2	2.13	2.13
Secondary Education	10	10.64	10.64
University Education	61	64.89	64.89
Training Institutions	16	17.02	17.02
Total	94	100.0	100.0

5.3.2 Place of conducting the study

5 The statistics on the implementation of the study were also reported according to GCC countries where the theses were carried out as shown in table 4.

Table 4: Implementation of the study

Experiment Location	Frequency	Percent	Valid Percent
Bahrain	28	29.79	29.79
Saudi Arabia	20	21.28	21.28
Kuwait	45	47.87	47.87
Oman	1	1.06	1.06
Total	94	100.0	100.0

5.4 Results related to question four: How DTTP faculties evaluate the practice of scientific research in the distance education and training program?

5.4.1 What were the strengths of the program as viewed by internal examiners?

Strengths of the program as viewed by external examiners included the following:

1. The proper orientation of the program as a sub-domain of education technology.
2. Addressing recent issues in the field of distance teaching and training.
3. It is a research oriented program.
4. Research methodology adopted in the program is scientifically justified.
5. Looking forward to utilize the developmental research that discusses all areas of research in educational technology and its related fields.
6. The value of participation in scientific conferences and seminars in the field.
7. Diversity in research topics covered by students' research.
8. More feasibility of research results for generalization.

5.4.2 Results related to weaknesses in Master's degree thesis research as seen by internal examiners included:

1. Weak formulation of theoretical frameworks and some aspects of citation and referencing.
2. Some contradiction between research objectives and research procedures.
3. Students focused more in their theses research on areas of design and development.
4. Research efforts concentrated on theory rather than practice.
5. Research is more dominated by the technological aspects rather than pedagogical aspects.
6. Some shortcomings in discussion and interpretation of results

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5.4.3 Suggestions for future improvement of the program

1. Program modules should focus on relating distance teaching and training to domains of educational technology.
2. Research approaches should be diversified and not limited to the developmental approach.
3. Teaching the program modules throughout the semester and limiting instructional activities of each module to a period of one month.
4. Encouraging students to participate in local, regional, and international educational conferences and symposiums.
5. Combining modules about research methods and research seminar.
6. Requiring scientific publication of students' master degree research thesis in recognized scientific journals or conference processing.
7. More attention should be paid to evaluation, quality issues, and improved practices research.

VI. DISCUSSION

The goal of the current study is to explore research trends and orientations in distance teaching and training in the light of the educational technology theory, and then assess the content of the DTTP master students' theses carried out during the period (2004/2005-2014/2015) based on the domains of research in educational technology proposed by AECT and the professionals in the field of distance education.

In 1994, AECT defined instructional technology as the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning (Seels & Richey, 1994). Research in educational technology can be classified and built around five separate areas of concern to instructional technologists including design, development, utilization, management, and evaluation.

Distance education as a structured learning in which the student and instructor are separated by place, and sometimes by time is currently the fastest growing form of domestic and international education. Research in distance teaching and training can be classified into the main domains of research in educational technology and their related sub-domains (i.e., design development, utilization, management, and evaluation). Research in any domain contributes to research and theory shared by other domains. An example of a shared theory is the theory of feedback which is used in some way by each of the domains (AECT, 1994).

Results of data analysis revealed that 45 theses representing (47.87%) were conducted in Kuwait, 28 theses representing (29.79%) were carried out in Bahrain, followed by Saudi Arabia with 20 theses representing (21.28%), and only one thesis representing (1.06%) in the Sultanate of Oman came in the field of training. Most of the training studies were conducted in Bahrain. It is worth mentioning that; the place of application is largely governed by the degree of facilities available to the researcher as well as the settings of the environment and context of educational application or training.

Concerning the research domain, research in the design domain was noted in 37 theses representing (39.36%), followed by media utilization domain noted in 22 theses representing (23.40%), and then came the developmental research domain which was noted in 20 theses representing (21.28%). Training issues were addressed in 9 theses representing (9.57%), evaluation research domain was addressed in 5 theses representing (5.32%), and finally needs assessment domain was addressed in one thesis representing (1.06). These results were unlike Jamaludin, Alias, and DeWitt (2015) study results which found that majority of the reviewed research focused on the evaluation domain.

In terms of the independent variables: e-Learning as an independent variable appeared in 44 theses representing (46.81%), followed by blended learning in 22 theses representing (23.40%). The virtual learning environments addressed in 11 theses representing (11.70%). This was followed by the variable of interactive learning activities in 6 theses representing (6.4%), then teaching methods addressed in 5 theses representing (5.32%), and learning methods addressed in 3 theses representing (3.19%). Mobile learning as a variable was addressed in one thesis representing (1.06). These research areas were among the 10 major technology trends in education reported by Chris (2014).

In terms of research methodology, the experimental research methodology was used in 84 theses representing (89.36%), while in the early years of the program; the survey method was used in 10 theses representing (10.64%). Those results contradicted with Müjgan, İrem, and Evrim (2012) who revealed that researchers often used surveys and questionnaires as data collection tools in studies published between 2008 and 2011 in TOJET, and with Ali and his colleagues (2009) who found that approximately 80% of the master theses completed in Turkey during 2000-2007 were based on descriptive models using questionnaires.

Results of data analysis also revealed that the highest rate of thesis implementation took place at the University stage with 61 theses representing (64.89%), whereas implementation of 16 theses representing (17.02%) took place in training institutions, followed by 10 theses representing (10.64%) implemented in high school environments, and 5 (5.32%) on primary school students, in addition; only two studies (2.13%) were carried out in the middle stage. In the light of these results, one can say that university education is the best suitable environment for distance learning and e-learning.

In conclusion, based on the study results and their discussion, the researchers recommended the following:

1. Maximizing the use of the developmental research approach in caring out master degree research of DTTP students.
2. Emphasis on incorporating the developmental research approach as a core component of the study plan for the module of the research methods in the DTTP.
3. Extending environments for implementation of research to focus more on schooling and training settings.
4. Capitalizing more on the integration of blended learning as a major component of master theses research titles to achieve better learning/training potential outcomes.

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