



# **Predicting International Critical Success Factors in e-learning:**

**A comparison of four universities from China, Mexico, Spain and USA.**

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# Abstract

Success in online learning is crucial and many researchers have studied factors which affect learning outcomes using different perspectives and models although there are a few researches using a holistic perspective of the learning process.

This study identifies factors that contribute to success in online learning in higher education from learners' and teachers' perspectives. A systemic and socio-constructivist based model of inputs-process-outputs of learning was used with five learner factors that include what learners bring to the online learning experience (general self-efficacy, online self-efficacy, motivation, prior knowledge and course expectation). Eight institutional predictor factors that include factors that universities give to the learner's experience on learning (learner support, social presence, direct instruction, learning platform, instructor interaction, learner interaction, learning content, and course design) and three different outcome factors that include what learners receive from their online learning experience (learner satisfaction, knowledge acquisition, and knowledge transfer) were analysed.

A questionnaire was completed by 198 learners and 40 instructors from a university in Mexico and was then contrasted with results found in three universities in three different countries, the University of New Mexico (USA), the University of Peking (China) and the Open University of Catalonia (Spain).

Based on the multiple regression analysis, several variables which are predictors of learner success in online learning environments were identified. The findings suggest that from learners' point of view, course design, learning content and prior knowledge were significant predictors of learner success. On the other hand, instructors indicate there are six primary factors that are most important in establishing an effective online classroom: course design, instruction, learning platform, learning interaction, learning content and social presence.

Findings also suggest that learners tended to agree more with the statements of learner factors than teachers. Teachers tended to agree with institutional factors, learners tended to agree with the statements of satisfaction more than teachers in contrast with instructors, who tended to agree more with statements of knowledge acquisition and knowledge transfer.

Learning satisfaction was significantly associated with the time in years using the Internet by learners and it was also significantly associated with the number of hours devoted to the course per week. This result suggested that learners with more experience using Internet are more confident to use the platform and complete the tasks. They have enough skills for finishing activities in a short period of time and using the course as a useful learning experience.

Using the Hofstede's (2001) cultural dimension framework, this study examines differences and similarities between countries. From the learners' point of view, all five learner factors differed significantly according to the university of the learners; seven institutional factors differed significantly according to the university of the respondents and they had similar self-reports in terms of instructor interaction; and two outcome factors differed significantly according to the university of the respondents: knowledge acquisition and ability to transfer. Findings also suggest that from instructors' point of view, online education is driven culturally in the sense that teaching methods adopt different solutions in the three countries due to the different importance each country gives to diverse groups of factors. Moreover, learning outcomes score similarly in the three countries and instructors consider learners' prior knowledge adequate for following online courses. Compared to other research results in online learning, in this study instructors generally reflect that they are more concerned about content and social presence than about technological matters.

The findings of this research will be helpful for faculty and instructional designers for implementing learning strategies addressing cultural differences.

# **Keywords**

Online learning, e-learning, online success, critical success factors, course design, learner-instructor interaction, instructor perception, learner perception, learner satisfaction, knowledge acquisition, knowledge transfer, cultural differences, cross-cultural, higher education, educational quality, academic performance, cultural context, cultural differences



# Dedication

Dedicated to my parents, for encouraging in me the value of education.

This dissertation is also dedicated to my wonderful Karina, who has been my inspiration since the beginning of this journey.

I also dedicate this in memoriam to my grandfather (2002) and my uncle (2013), who always believed in me.



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# INTRODUCTION



This chapter outlines the background (section 1.1) and context (section 1.2) of the research and its purposes (section 1.3). It also describes the significance and scope of this research and provides the specific objectives (section 1.4). Finally, it includes an outline of the remaining chapters of the thesis (section 1.5).

## 1.1 BACKGROUND

In the last years, universities have experienced globalization impact; this has had an influence on learners and instructors to demand both, development of technological and intercultural competencies and intercultural awareness among institutions. In the view of this situation, universities have reacted giving different proposals and they are still developing methods to face the teaching and learning process in this century.

Universities have promoted the e-learning process and making use of Information and Communication Technologies (ICTs) so as to offer their learners a way to develop new competencies as well as to take advantage of flexibility of time and space. The use of these tools is expanding in education, hence there are more and more institutions offering online curriculums through their e-learning platforms and also using open educational resources (OER).

In this context, the main factors enabling development and promoting new scheming of projects aimed to offer e-learning curriculums are the following:

1. The development of communication networks and the use of ITCs have transformed the society in the last decade. The Mexican society, which is part of this study, has been forcing universities to modernize and to adapt to these changes.

2. The use of e-learning is emerging as a solution to literate a large part of the population who doesn't count with the opportunity to access traditional university education for socioeconomic reasons and whose inclusion has to be in some other way due to current work and family affairs.

3. Universities and public institutions have found that this way of approaching students of different economic status and society is easier and cheaper.

Despite this growth, e-learning still has the challenge to understand the factors having more influence on creating an effective education environment and influencing students to achieve successful completion of their online training.

## **1.2 CONTEXT**

The scope of this study is university which has being increasingly immersed in global and multicultural society, and where development of these factors can be and should be supported with the aim of improving the learning process and instructors' expertise.

Today, the use of e-learning is spreading quickly in Mexico with hundreds of courses offered by different institutions particularly at the National Autonomous University of Mexico (UNAM), counting on a coordination of the Open University, e-learning and the Institute of Technology and High Studies of Monterrey (ITESM, for its acronym in Spanish), pioneer of Virtual University modality and more recently the National University of Distance Education (UnADM) that started in 2010 as a government project.

According to the Mexican Ministry of Public Education (SEP for its acronym in Spanish) (SEP, 2010) in Mexico, in 2009, almost 200, 000 students were studying in e-learning modalities and an accelerated growth has been forecasted for the coming years.

In recent years, different mechanisms as the ones mentioned below have been launched to promote e-learning in Mexico, where the main part of the present study takes place.

- The course of action of the Common Area for Distance Higher Education (ECOESAD, for its acronym in Spanish), coordinated by UNAM and involving 37 institutions of higher education.

- The creation of the National Distance Education System (SINED, for its acronym in Spanish), coordinated by the National Association of Universities and Institutions of Higher Education (ANUIES, for its acronym in Spanish) and supported by SEP.

- The establishment of the National University of Distance Education of Mexico, directed by SEP.

- The signing of a cooperation agreement with the National University of Distance Education (UnADM) of Spain for supporting in the design of both, models for disabled students and inmates.

In this context, identifying the most important factors of success in e-learning has significant advantages for both, students and universities offering online courses or starting with that process.

That way, it is worth highlight that identifying success factors in e-learning is particularly relevant given that every day, in Mexico, a higher percentage of students are enrolling, for instance, at UnADM, there were 74, 671 students in 2013, (Cervantes 2013), e-learning based universities and several universities offering bachelor's degrees should count on adequate curriculum for developing skills needed to face globalization.

### **1.3 OBJECTIVE AND RESEARCH QUESTIONS**

The aim of this study is to identify the critical success factors in e-learning that are associated with student satisfaction, knowledge acquisitions and knowledge transfer from a University in Mexico and to compare these data with three more countries.

Currently, research in the Mexican context, as we will see in the literature review, besides being scarce, is not based on the e-learning environments but, mostly, on blended-learning training curriculums presenting the following characteristics:

- They are mainly focused on measuring effectiveness of teaching in e-learning through learner's knowledge evaluation after the course or in end-of-term exams and not on what learners' perceptions are regarding their knowledge and participation in the course. This holistic study should consider more factors.

- Research in this field has not considered that learners can estimate how much they have learned in the course, as well as expressing their satisfaction with it at the end-of-term.

- Nor have taken into account that learners can express how they use their new knowledge in personal, academic and professional life.

The latter are reasons to direct attention to different areas of interest to study and deepen knowledge of some success factors in e-learning.

From the above mentioned statements, the following research questions arise:

1 To what extent is each predictor variable (learner factors and institutional factors) correlated with each outcome variable (learner satisfaction, knowledge acquisition, knowledge transfer)?

2 To what extent do the combination of learner's factors and institutional factors predict student satisfaction, knowledge acquisition, and knowledge transfer?

3 Which of the variables remain significant when all are used to predict learner satisfaction, knowledge acquisition and knowledge transfer?

4 Do time variables (time spent on Internet, time spent in social networks, and time of the day used for doing the course tasks) affect outcome variables (learner satisfaction, knowledge acquisition, knowledge transfer)?

5 What predictor variables are different and similar when comparing four universities from China, Mexico, Spain and USA from learners' and instructors' perspectives?

## 1.4 SPECIFIC OBJECTIVES

The main purpose of this study is to identify factors affecting success in e-learning from university learners' and instructors' perception by using multiple regression analysis with a sample of online students from the Popular Autonomous University of the State of Puebla (UPAEP, for its acronym in Spanish) in Mexico and compared with previous data from China, Spain, and USA.

The following are five specific objectives in this study that correspond with the research questions:

- I. To identify the relationships between learner factors (general self-efficacy, online self-efficacy, motivation, prior knowledge, course expectation) and each outcome factor (learner satisfaction, knowledge acquisition, knowledge transfer).
- II. To identify the relationships between institutional factors (learning support, social presence, course design, instruction, learning platform, instructor interaction, learner interaction, learning content) and each outcome factor (learner satisfaction, knowledge acquisition, knowledge transfer).
- III. To determine the extent to which learner satisfaction, knowledge acquisition and knowledge transfer can be precisely predicted from learners' and instructors' perspective.
- IV. To determine the relationships between time factors (time spent on Internet, time spent in social networks, and time of the day used for doing the course tasks) and each outcome factor (learner satisfaction, knowledge acquisition, knowledge transfer) from learner's perspective
- V. To identify and compare the critical success factors in e-learning from the perception of learners and instructors from a university in Mexico and compare these data with three more countries.

## **1.5 THESIS ORGANIZATION**

This research is presented in five chapters; the first chapter of this research outlines the basic principles under which this project will be conducted.

Chapter 2 examines in depth the theoretical foundations of the previous related research published in this area of interest. This chapter will trace recent literature about successful factors in e-learning and how these factors are related to student satisfaction, knowledge acquisition and knowledge transfer. Here will also be found an analysis of recent literature relating to the perspective cultural differences in online education, although the aim of the thesis at this point is to identify aspects that affect e-learning rather than giving cultural explanations.

Chapter 3 explores the quantitative elements within the methodology of this research.

Chapter 4 presents the results of the data from this research in quantitative and tabular form and also presents discussion of the findings and also presents an analysis of the results and the discussion part. Finally,

Chapter 5 combines all the previous work into a conclusion of the results with recommendations for future research.

# **THEORETICAL FRAMEWORK**



Distance learning through technology has been one of the most growing practices in higher education. However, for this new means of instruction, educational administrators have an interest in knowing which specific behaviour affects learner outcomes in order to support the creation of better educational practices for designing online courses and benefit institutions, students, and faculty.

Thus, the purpose of this chapter is to identify learner and institutional factors that lead to positive learner outcomes in online courses and to present the theoretical approach which this research is based on.

For this study, “learner outcomes” refer to measures of learner satisfaction, learner knowledge acquisition and learner knowledge transfer. The nature of these outcomes is described in the factors of success in e-learning section (2.2.3) of this chapter.

It is important to have a common understanding of the terminology, nevertheless, in the education scope, there has been confusion about the terms in online learning and e-learning; there are several definitions, and sometimes confusing meanings of this terms in the literature (Guri-Rosenblit & Gros, 2011). Many of them have connections to the associated technology and many others with educational practices. This study will use the term “e-learning” defined by Sangrà, Vlachopoulos, and Cabrera (2012):

“E-learning is an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning”.

For this reason this study will use the terms “online learning” and “e-learning” interchangeably throughout.

## **2.1 Theoretical approach**

The theoretical approach of this research includes:

1. Constructivist perspective of instruction based in socio-cultural theory of development (Coll, 2001; Riviere, 1998; Vygotsky, 1978; Werstch, 1991),
2. The evaluation and quality of online education (Harvey & Green, 1993; Marshall & Mitchell, 2007),
3. The significance of time factor in online learning (Barbera, E., Gros, B. & Kirschner, 2012; Reimann, 2009; Romero, 2010),
4. Success factors in online learning, from which literature holds that external factors such as institutional and factors related to learners are relevant for online learning success (Barbera & Linder-VanBerschoot, 2011; Gunawardena & Zittle, 1997),
5. The perspective of culture in online learning (Hofstede, 2001; Parrish & Linder-VanBerschoot, 2010).

### **2.1.1 Constructivism in online higher education**

Constructivism theory holds that learners create their own body of knowledge based on interaction and active mental activity with their environment by applying and modifying their interpretation of reality, knowledge and existing beliefs (Jonassen, Mayes & McAleese, 1993).

More specifically, from a sociocultural perspective, where we are situated, knowledge is built at two levels (Vygotsky, 1978):

First, externally (intermental or interpsychological level): through the social interaction with a more expert person in the field of knowledge (instructor/ other learner in the educational context) thought the specific content.

And then, internally (intramental or intrapsychological level): using social mediators (psychological tools, language principally) making more complex connections at the cognitive level.

Developing interactions in both levels the learner creates deeper analysis and interpretation of experiences and perceptions and is encouraged at higher-order meaningful learning. Collaborative construction of knowledge aims a social negotiation and commonly results in a common understanding.

Social constructivism is presented as a situated social practice in which the learner's interpretations are being negotiated with more expert participants and propose different collaborative learning settings such as communities of practice and knowledge-building communities.

Several strategies based on socio-constructivism are being used in online learning. The use of technologies and web 2.0 such as blogs, wikis, discussion boards and video streaming, have the potential to improve active learning and pedagogical interactivity among learners and instructor and support collaborative learning. As practical examples, learners use social networks for researching and sharing content, links and resources, also use discussion boards to create in specific project, posting messages related to a specific task or for a specific work group. Vodcasting and podcasting allow learners to share their collection of media files related to their course. Learners can also use technological devices such as MP3players, tablets and mobile phones, since these devices allow learners to keep in touch with the course material anywhere at any time. For a theoretical review about the fundamentals of socio-constructivism related to the use of ICT see Coll and Monereo (2008).

Although from a constructivist point of view there are no specific methodological strategies associated. Some common examples that foster interaction and collaborative online learning used by instructors are problem-based-learning, case studies and team concept mapping. The importance in this approach is the scaffolding process that the mediator (teacher and technology mainly) provides in the Proximal Zone of Development (Vigotsky, 1978) of the student which allows him to be involved in a meaningful learning experience building a progressive educational process and activating prior knowledge by making it more significant and complex.

### **2.1.2 Mediators in e-learning contexts: Teacher and Technology roles**

From a constructivist perspective, mediation is an important mechanism in teaching and learning process. Mediators are social (Vygotsky, 1978) and cognitive tools (Jonassen, 1991) that help the individuals to interiorise culture and its meanings and contents. The most important mediators in an e-learning process are the teacher and the technology although, as it is obvious, both are mediators of a different nature. They afford and they constrain ways of thinking, representing and communicating what is been learnt.

The teacher's role is important in all teaching and learning process, but in online learning, this role is fundamental (Zhoa, McConnell, & Jiang, 2009) since technology is not enough for effectiveness in e-learning; student needs the instruction of teachers and guide throughout the course (Collis, 1995). For this reason, this research takes into account the teacher's role in online instruction.

The communication patterns have changed during the last years by the use of technology. Now there are more opportunities to communicate when concepts and complex procedures are shown. According to Jonassen and his colleagues (1995), in a traditional classroom teacher contribute up to 80% of the verbal exchange. On the other hand, with the use of technology, the instructor contributions are only 10-15% of the message volume. With Web 2.0 tools, this percentage is supposed to be even less. This change in the pattern of interaction makes more emphasis in written than dialogue and gives a new role to the learners and instructors. The classroom is a new place for alternating discourse between learners and instructors, where instructors have to give students more space for communication with different activities, for instance: making questions, asking for personal opinion of the topic, proposing new questions or different points of view, selecting alternatives, giving clarifications, etc. although we know that communication is not learning, it improves the interaction among students.

Distance education has a current different qualitative context because of the use of technology, and we can permit ourselves to criticise, from a constructivist perspective, the isolated learning process attributed to these technologies, and also information centred systems that are provided to a huge number of learner and have to assimilate the information more or less in a passive way and without enough

analysis. On the same line of argument, Garrison (1993) proposed that the instructor does not have to be only a “casual resource” for correction and planning; he has to be a supporter of the interaction between learners and content, exchange points of view, fit the learners needs according to the learning objectives and giving the opportunity for building cooperative knowledge and critical thinking. As a result, learning content will be used with more efficiency and will improve the building knowledge about a shared reality.

On the other hand, in e-learning, technology is a strong mediator that needs to be taken into account in learning design, development and evaluation with the aim to be a fostering partner of the teacher and the student in the online learning and teaching process. Technologies also enable students to break cultural barriers. For this reason, it has to be used with defined and clear educational objectives otherwise could be a difficulty for learning.

Technology is a means and not an end in itself; it is a means for learning. For this reason, learners need to know how to use it and not be ruled by it. Technology has gained popularity due to the advantages it offers, for instance, it shows ordinary cultural practices transcending writing and oral communication and integrates them and even adds more applications as graphic animation, video, videoconferencing, etc., all of these resources bring the world closer to students who are learning and making more meaningful knowledge.

After highlighting important literature on the quality and success of e-learning studies, we present in detail the model used in this research. As it was presented at the beginning of the section the model agglutinates factors of a different nature and level of analysis and stress the importance of internal relationships amongst variables.

### **2.1.3 Quality and success evaluation in e-learning**

The concept of quality has multiple meanings according to different areas. In the education area, there are several authors that propose a definition of quality.

According to one of the references in this field (Harvey and Green, 1993) a structural development of quality consisting of five categories is proposed:

Quality as exceptionality: The objective for the academic community is to be excellent and to work with high standards of academic success.

Quality as perfection or consistency: This definition sets specifications in the academic process that achieve with detailed standards.

Quality as fitness for purpose: this definition is related to quality to purpose of a product or service; it focuses on the needs of the customer of higher education.

Quality as value for money: Judge's quality in terms of costs, quality is directly related to price, a student receives an education with quality at an affordable price, and if universities increase in cost-effectiveness, it will increase competition between universities for students and financing.

Quality as transformation: this approach defines the student as a central participant of higher education and the learning experiences would produce a fundamental change that includes empowerment to take action with the help of the knowledge, experience and abilities acquired at the university, and it will produce an enhancement of learner satisfaction.

Evaluation of quality in higher education has been a key aspect for the response from universities to society. However, there is no agreement in quality's definition, and what the importance of evaluations of quality is in higher education systems. Furthermore, it holds that there are different conceptions about quality in e-learning.

An evaluation in e-learning has to take into account the field of the influence. Sangra (2004) proposed three important areas:

The scope: the first one is the institutional scope, related to university characteristics, objectives for using e-learning in their programs, etc., the second one is the course, related to the learning objectives and course satisfaction of learners and the third the group of elements that conform the support of learning (materials, teaching, university services, library).

The perspective: Sangra proposed four perspectives because each scope has differences depending on the point of view of the individual. There are five perspectives proposed: learner perspective (experience and satisfaction with the learning process), instructor perspective (the academic point of view), institution

perspective (institution and regulatory agency) and prescribers and the wide range of stakeholder actors that normally give employability help to graduate students.

Approach: there are at least four approaches for quality evaluation: a) technology approach, related mainly to the technology aspects b) economic approach in this case the economic results are more important than others c) educational approach, related to the student's academic performance and d) global approach, in this case the objective is try to take into account all earlier approaches.

It is difficult to find an evaluation model for online learning that include all areas, scopes, perspectives and approaches, however, there are some important examples used as references (table 2.1) of management systems of quality developed by different organizations around the world.

Table 2.1 Examples of quality management systems in distance education and e-learning.

Quality management systems in distance education and e-learning	Relevant areas
1. EADL/European Association for Distance Learning: Quality Guide (2003)	Customer satisfaction, People (employees) Satisfaction and Impact on Society are achieved through Leadership driving People Management, Policy and Strategy, Resources and Processes, leading ultimately to excellence in Business Results.
2. NADE /Norwegian Association for Distance Education: NADE's Quality Standards for Distance Education (2001) (Ljoså & Rekkedal 1993).	Based on a matrix of problem areas for evaluation of a professional. The model designates nine areas for this self-evaluation determined by a matrix in which one evaluates students, teachers/courses and the organisation in terms of conditions and constraints, processes and results, respectively field or an institution.
3. AFNOR: Code of practice: Information technologies – eLearning Guidelines (French Code of Practice)(2004)	The guidelines are 'customer-oriented', described as a process-oriented model. The guidelines are presented in 6 main areas: 1. Introduction, 2. Analysis, 3. Construction stage, 4. Equipment stage, 5. Implementation, 6. Assessment.
4. ODLQC/ Open and Distance Learning Quality Council: Quality Standards (2000)	The standards define requirements on the provider and the pivotal activities of the provider, and are divided into 6 areas: 1. Outcomes, 2. Resources, 3. Support, 4. Selling, 5. Requirements of the provider, 6 Collaborative provision
5. QAA/Quality Assurance Agency for Higher Education: Guidelines on the Quality Assurance of Distance Learning (1999)	Are organised under 6 areas which should be specifically attended and focussed upon when programmes are offered as distance study:1: System design – the development of an integrated approach, 2: The establishment of academic standards and quality in programme design, approval and review procedures, 3: The assurance of quality and standards in the management of programme delivery, 4: Student development and support, 5: Student communication and representation, 6: Student assessment
6. EFMD/European Foundation for Management Development: EFMD CEL (e-Learning Accreditation	The quality criteria of EFMD CEL contains 6 areas: 1. Programme profile, 2. Pedagogy, 3. Economics, 4. Technology, 5. Organisation, 6. Culture.
7. DIN/Deutsche Institut für Normung e.V: PAS 1032-1 Reference Model for Quality Management and Quality Assurance	The PAS 1032-1 process model follows the following process categories with possible challenges for e-learning in business (Reglin 2006): 1. Requirement analysis, 2.Context, 3. Concept, 4. Production, 5. Introduction, 6. Implementation, 7. Evaluation
8. ISO/ International Organization for Standardization: ISO/IEC 19796-1 Standard on Quality for E-Learning	ISO/IEC 19796-1:2005 consists of the following items: • description scheme for quality management; • process model defining the basic processes to be considered when managing quality in the field of ICT-supported learning, education, and training; • conformance statement for the description format. The process is divided in seven steps: 1. Needs analysis: Identification and description of requirements, demands, and constraints of an educational project. 2. Framework Analysis: Identification of the framework and the context of an educational process. 3. Conception/Design: Conception and design of an educational process. 4. Development/Production: Realization of concepts. 5. Implementation: Description of the implementation of technological components. 6. Learning process: Realization and use of the learning process. 7. Evaluation/Optimization: Description of evaluation methods, principles and procedures

There are also many agencies focused on evaluation of quality in distance education and e-learning. In general, evaluation models of quality in online learning were created in the 2000's and imply characteristics of distance education context; learners and instructors, and relying on different agencies. There are different dimensions to evaluate. The most frequent ones are based at the institution level, and course characteristics. For example, in a review of literature about evaluation in online learning, Frydenberg (2002) found that the most common evaluated factors are: technological infrastructure, student support, learning design, direct instruction, instructor services, program delivery, institutional support (financial health and legal regulatory requirements) and program evaluation; those are the same factors that can be found nowadays in current analysis (see list below).

The following is a summary of relevant and representative agencies that provide evaluation philosophy and evaluation tools (commonly using rubrics), mainly at the macro level but also at the course level. The most important evaluation frameworks in distance education are represented below. These were selected since they can apply in different contexts and include a variety of outcomes showing the diversity of aims and perspectives. Those are mainly focused on: learning outcomes (acquisition and transfer of learning), completion rates and learning satisfaction and costs (referring to the cost of the course) – benefit (benefits obtained, efficiency, and effectiveness).

- **Van Slyke model.** (1998). One of the first models in using input and outcome variables was the proposed by Van Slyke et al. (1998). This model consisted of several input variables: learner, institutional and course characteristics; and two main outcome variables: institution (cost, instructors' productivity, resources, and geographical reach) and learner outcomes (technical awareness, online self-efficacy).
- **Belenger and Jordan's framework.** (2000). Belenger and Jordan (2000) proposed a framework with four input variables: learner variables that include self-efficacy, computer proficiency, time management, interaction, problem solving, planning, prior knowledge, attitudes and expectations. Course variables included assessment,

course support, and course design. Technology variables included ease of use of the platform. Institutional variables integrated administrative and technological support to learners. In addition, they comprised four outcome variables which are learner, instructor, society and institution outcomes.

- **Web-Based Education Commission.** (2000). The Power of the Internet for Learning: Final Report of Web-Based Education Commission to the president and Congress of the united States Retrieved from <http://www.ed.gov/offices/AC/WBEC/FinalReport/>, <http://www2.ed.gov/offices/AC/WBEC/FinalReport/WBECReport.pdf>
- **Institute for Higher Education Policy, 24 Benchmarks for Success in Internet-Based Distance Education** Institute for Higher Education Policy. (2000). *Quality on the Line: Benchmarks for Success in Internet-based Distance Education* Washington, DC: Institute for Higher Education Policy Retrieved from <http://www.nea.org/assets/docs/HE/QualityOnTheLine.pdf>
- **Bates' ACTIONS model of quality.** Bates (2000). Managing technological change: *Strategies for college and university leaders*. San Francisco: Jossey-Bass. One of the first who included the cost factors that affect students and institutional. This model was designed to help with the selection of instructional technologies; each of these factors can be applied to online education.
- **The CIAO model.** (2000). It was developed by Scanlon, Jones, Barnard, Thompson and Calder based on their evaluation experience of 20 years. This model consisted of context, interactions, and outcomes. Each variable had a rationale, data and methods, outcomes of this model are learning acquisitions, affective learning, and changes in learners' perceptions.
- **Khan's eight dimensions of e-learning framework.** Khan, B. (2001). It is a framework for web-based learning. In B. Khan (Ed.), *Web-based training* (pp. 75-98). Englewood Cliffs, NJ: Educational Technology. It

included eight primary categories necessary for quality learning online: institutional, management, technological, pedagogical, ethical, interface design, resource support and evaluation.

- **The model of evaluation in online education proposed by Hughes and Attwell.** (2002). It has five groups of variables: learner variables (demographics, learning background, prior experience with technology, motivations and expectations), environmental variables (institutional, environmental and physical variables), technology variables (Software and hardware network connections, ease of use of platform), contextual variables (cultural background, geographic location and political context), and pedagogic variables (learner support , learning outcomes, interaction, accessibility).
- **Frydenberg's Quality Standards in e-Learning.** Frydenberg, J. (2002). Quality standards in e-learning: a matrix of analysis. *International Review of Research in Open and Distance Learning*, 3(2). The scientist carried out a research about the published quality standards for online education in USA. The findings showed that there were some common factors in literature: institutional and executive commitment, technological infrastructure, student services, instructional design and course development, instruction and instructors, program deliver,; financial health, legal and regulatory compliance, and program evaluation.
- **Five pillars of quality online education.** Lorenzo, G., & Moore, J. C. (2002). The Sloan Consortium Report to the Nation: Five pillars of quality online education. Retrieved from <http://sloanconsortium.org/publications/books/vol5summary.pdf>

Lorenzo and Moore's (2002) evaluation model was based on five essential dimensions containing metrics that established standards for quality. The pillars were: learning effectiveness, cost-effectiveness and institutional commitment, access, satisfaction of the instructors and learners. This model includes measurement scales based on the National

Study of Students Engagement (NSSE, <http://nsse.iub.edu/>) and are still used.

- **Lee and Dziuban's Quality Assurance Strategy.** Lee, J., & Dziuban, C. (2002). Using quality assurance strategies for online programs. *Educational Technology Review*, 10(2), 69-78. They identified five factors for evaluation quality in online education: administrative leadership and support, on-going program concerns, web course development, student concerns, and faculty support. They proposed that online programs have to be planned using discussion, evaluation, and analysis to improve the success of online programs.

- **Accreditation and Quality Assurance Study** by Council for Higher Education Accreditation's. (2002). Accreditation and assuring quality in distance learning. *CHEA Monograph Series 2002* (Vol. 1). Washington DC: Author. This study shows that there are seven important factors to evaluate online education programs: Institutional mission, institutional organization, institutional resources, curriculum and instruction, faculty support, student learning outcomes.

- **Quality Online Course Initiative Rubric** by Network University of Illinois. Illinois Online Network.(2006)Quality Online Course Initiative Rubric and Checklist Retrieved from <http://www.ion.uillinois.edu/initiatives/qoci/index.asp>

This model offers two versions of a rubric for online courses, the first one is a comprehensive rubric with room for comments and the second one a shortened version with only a checklist.

- Swedish National Agency for Higher Education (2008). **E-learning quality. Aspects and criteria for the evaluation of e-learning in higher education.** Report 2008:11 R. Stockholm
- **The Interregional Guidelines for the Evaluation of Distance Education Programs (Online Learning) from the Western Interstate Commission for Higher Education Cooperative for Educational Technologies** (WCET). (2011)

<http://www.msche.org/publications/Guidelines-for-the-Evaluation-of-Distance-Education-Programs.pdf>

At the micro level there are other models but important evaluation tools mainly focused on the quality of the courses that stress the effectiveness of the courses online. They were frequently derived from the models presented previously but provided more specific elements for evaluation course-centred. Those tools had the aim of assisting institutions with developing quality online courses. Some examples are the following:

- Central Michigan University Quality Assurance Checklist. A checklist for a faculty to review and evaluate their online courses for structure, syllabus, course content and usability, learning community, and assessment: <http://www.cel.cmich.edu/cid/quality-checklist.html>
- Online Course Evaluation Project (OCEP), Monterey Institute for Technology and Education. Provides links to criteria-based evaluation tools and examples of recently reviewed courses: <http://www.montereyinstitute.org/pdf/OCEP%20Evaluation%20Categories.pdf>
- Online Course Development Guide and Rubric (University of Southern Mississippi Learning Enhancement Center). Provides a rubric and self-assessment tool for instructors based on best practices: [http://ablendedmaricopa.pbworks.com/f/LEC\\_Online\\_course+rubric.pdf](http://ablendedmaricopa.pbworks.com/f/LEC_Online_course+rubric.pdf)
- Online Course Development Guidelines and Rubric (Michigan Community College Association Virtual Learning Collaborative). Guidelines and a rubric intended to assist institutions with developing

online courses of quality:

<http://www.mccvlc.org/~staff/content.cfm?ID=108>

- Criteria for Evaluating the Quality of Online Courses (Clayton R. Wright, Grant MacEwan College, Edmonton, Alberta). Guidelines for course developers or those evaluating the effectiveness of online courses.  
<http://elearning.typepad.com/thelearnedman/ID/evaluatingcourses.pdf>
- Benchmarking of Virtual Campuses Project (European Commission, 2002). Formed by eight partners involved in different successful ODL projects: universities and research institutes, this project is focused on the establishment of evaluation criteria in order to achieve the Quality Standards for Virtual Campuses: <http://www.benvic.odl.org>

The following table shows some relevant examples of international organizations involved in quality e-learning activities.

Table 2.2 International Organisations Involved in E-Learning Quality Activities.

Organization	Description
ISO – International Organization for Standardization	Engaged in standardisation systems including quality assurance and quality certification and has entered to e-learning field by issuing the ISO/IEC 19796-1:2005 Information technology - Learning, education and training - Quality management, assurance and metrics.
EFQEL – The European Foundation for Quality in eLearning	Organises a large number of European actors, institutions and organisations, in the field of education, training, open and distance learning and e-learning.
EFMD – European Foundation for Management Development	A network organisation for management and business education, that has developed a certification scheme also for certification of e-learning programmes, the EFMD CEL E-Learning Accreditation.
INQAAHE – International Network for Quality Assurance Agencies in Higher Education	With the purpose of collecting and disseminating current and developing theory and practice in the assessment improvement and maintenance of quality in higher education. It has developed quality guidelines for the work of the Quality Assurance Agencies.
EADL – The European Association for Distance Learning	An organisation with members mainly coming from the private distance education sector. The organisation developed already in 1994 its Quality Guidelines to improve the quality of distance learning institutes in Europe. The guide has been revised in the light of e-learning developments.
CEN – European Committee for Standardization	Promotes voluntary technical harmonisation in Europe in conjunction with worldwide bodies and its partners in Europe. The CEN/ISSS (Information Society Standardization System) has the main aim of contributing to the success of Information Society of Europe.
CEDEFOP – European Centre for the Development of Vocational Training	Established in 1975 is a European agency that helps promote and develop vocational education and training in the European Union (EU). It is the EU's reference centre for vocational education and training. The centre provides information on and analyses of vocational education and training systems, policies, research and practice. CEDEFOP maintains that quality assurance is a prerequisite for ensuring a better return on investment and more efficient and attractive VET systems and supports the development of quality in vocational training and e-learning.

### **2.1.3.1 Factors of Success in e-learning**

Success in e-learning can be determined as a consequence of display quality online courses. Nevertheless, online quality research sometimes stresses too much on the institutional and instructional aspects and also neglects part of the student success by taking into account only final grades. On the other hand, the definition of success as a good learning experience and result needs to be reconceptualised. Frequently, success in online learning is identified as learning effectiveness. The Success in learning is one of this terms that has been controversial for ages, despite the prescriptive revision of the field.

This section starts with a review about the success factors in online learning focusing on three factors: student satisfaction, knowledge acquisition and knowledge transfer.

Several researches have written about the important factors for success in e-learning. A literature review will be presented to identify the perspectives about the key factors for success in e-learning. It includes an analysis of the studies that have used factors affecting e-learning outcomes.

Literature indicates that external factors such as institutional and internal factors (related to the student) are very important for e-learning effectiveness. Specifically, previous studies lead by Chen and Jang (2010), Chu and Chu (2010), Johnson et al. (2009); Keramati, et al. (2011), Lim, et al. (2007), Menchaca and Bekele (2008), Selim (2007) and Wan et al. (2008) have applied various theories to identify factors determining performance of students in an online course. In literature, these factors are commonly referred as critical success factors (CSF) and they use different theoretical perspectives related to research in e-learning.

In general terms, there are two factors that are used more as outcomes: satisfaction and acquisition of learning. On the other hand, these studies have been done on samples of students, generally, leaving aside perceptions of teachers and administrators.

In those studies several aspects of e-learning have been taken into account to evaluate success and effectiveness in e-learning. Lim et al. (2007) proposed a model with 8 variables (learning motivation, computer self-efficacy, training content, face-

to-face meeting, E-mail communications, Ease of use, Support from supervisors, encouraging learning environment) in order to evaluate effective online training and how those variables affect learning performance and the degree of learning of the trainees and transfer performance; how well the trainees applied their new knowledge in their jobs. A positive relationship between motivation, computer self-efficacy, task related content and learner and instructor interaction (online and face to face) with learning performance and transfer performance was found.

Selim (2007) conducted a research among university students to determine the critical success factors and used four categories: instructors, students, information technology and university support. His findings were that the most critical factors for success were the instructor's attitude towards and their control of e-learning technologies, together with teaching style.

Wan et al. (2008) found two significant variables using a survey on a sample of 383 Chinese students participating in online courses: prior experience with ICT and virtual competence that affected learning effectiveness and satisfaction. Menchaca and Bekele (2008) used a framework to identify success factor of e-learning with human factors (competences, perception and attitudes), course factors (learning design and organizational aspects of instructors presence), pedagogic factors (direct instruction, teaching presence aspects, facilitation), leadership factors (Institutional aspects), and technology factors (ease of use and learning platform aspects).

Johnson, et al. (2009) used perception of course utility, course satisfaction and course grade as e-learning outcomes. A study conducted using a model of variables influencing e-learning outcomes and findings indicated that technology characteristics, trainee characteristics and metacognitive activity affect e-learning outcomes.

Perceived learning, persistence and satisfaction were used as outcomes by Chu and Chu (2010). They found that internet self-efficacy fully mediates the relationship between peer support and e-learning outcomes.

Chen and Jang (2010) used engagement, achievement, learning and satisfaction as outcomes. This study included data from surveys, final grades and numbers of times a student were logged into WebCt course management system. Findings

revealed that contextual support positively affected needs satisfaction, which then positively affected motivation and self-determination.

More recently, Keramati, et al. (2011) studied the influence of readiness factors and outcomes. Readiness factors were divided into three main groups including: technical, organizational and social. Finding showed that these factors variable plays a moderating role in the relationship between e-learning factors and outcomes.

Barbera and Linder-VanBershot (2011) developed a comprehensive model for online education with a multicultural and socio-constructivism perspective comprised of personal characteristics of learners and instructors with instructional and institutional variables and learning outcome factors. The model was sent to sample of learners enrolled in online courses and their instructors, at three universities in three different countries (United States, Spain and China). Findings indicated that there were differences between universities suggesting cultural preferences regarding instruction and achievement.

Based on the above mentioned factors, this study adopts Barbera and Linder-VanBershot (2011) perspective by understanding success like the merge of three factors: student satisfaction, knowledge acquisition and transfer of knowledge. These factors stress the learner experience. The model included relationships with instructional, institutional and also more internal factors.

A recent study by Jung (2012) involved Asian distance learners from 11 countries and used a conceptual model of the 10 dimensions of quality in distance education found that learner support, evaluation and assessment, course design, course content, institutional technology infrastructure, and learner-learner and learner-instructor interaction are the most important factors in considering quality in distance education, finally this study claims taking in account gender differences in the perception of quality.

### **2.1.3.2 Time Factor in e-learning success**

Online learning provides the possibility of working on the academic task at any time and doing other activities at the same time. Time is recognised as a core asset in online learning (Reimann, 2009). Success in online learning has a strong relationship

with student time patterns and time regulation. Kuo, Walker, Belland and Schroder (2013) and Romero (2010) found that the usage of e-learning is frequently performed during working hours. Also satisfaction has a strong relationship with the time of the day students attend activities in their online classroom and complementary temporal competence or time management is shown as one of the most important soft skills in the workplace.

Kuo and colleagues (2013) found a significant relationship with the number of hours spent online per week and online self-efficacy and self-regulated learning. Students who spent less than 5 hours online had higher online self-efficacy than those with more than 20 hours. In such study, findings revealed that students who were more confident using the Internet for their coursework might have spent less time online.

The researches of learners' success in online programs use numerous factors such as pedagogical factors, institutional factors, technical factors, learner and instructor factors, etc. However, time factor normally is neglected by educational researches (Barberà, Gros & Kirschner, 2012).

Time and place are the first barriers that online learning breaks and now learners have several possibilities for working in academic tasks. They can work in academic tasks during the day at the same time they are working or doing other activities, such as using social networks.

There is a new interest in knowing the effect of social media in success (Abramson, 2011) since the percentage of learners using social networks is growing and in some countries context research exposed that between 85% and 99% of learners at the university use Facebook (Jones & Fox, 2009). Furthermore, there are several studies positively associating learner's time related factors with learning performance, success and satisfaction in online learning.

Learner time related variables have been shown to impact learning performance. Romero and Barbera (2011) reported that time flexibility and availability to learn were related to better learner performance in online courses. In a collaborative learning framework, time patterns are also crucial for work group through online synchronous and asynchronous mechanisms (Romero, 2010). In this environment, the average time learners spent on the online discussion and group

work per week were found to be enhancing students learning achievement (Zhu, 2012).

## **2.2 Systemic model of success prediction**

The multicultural systemic model (Barbera & Linder-VanBershot, 2011) was selected in order to carry out our research since it takes into account elements that cover all areas and activities of the online e-learning process. The conceptual model comprises three dimensions: learner factors, institutional factors and outcome factors, (see figure 1). It was designed taking into account cultural differences and previous studies were conducted using this model in countries with different context: The United States, Spain and China.

The advantage of relying on this study is that they considered factors that have been theoretically based as relevant in research on the subject. Furthermore, a significant effort was made to measure the influence on learning, from the point of view of both teachers and students.

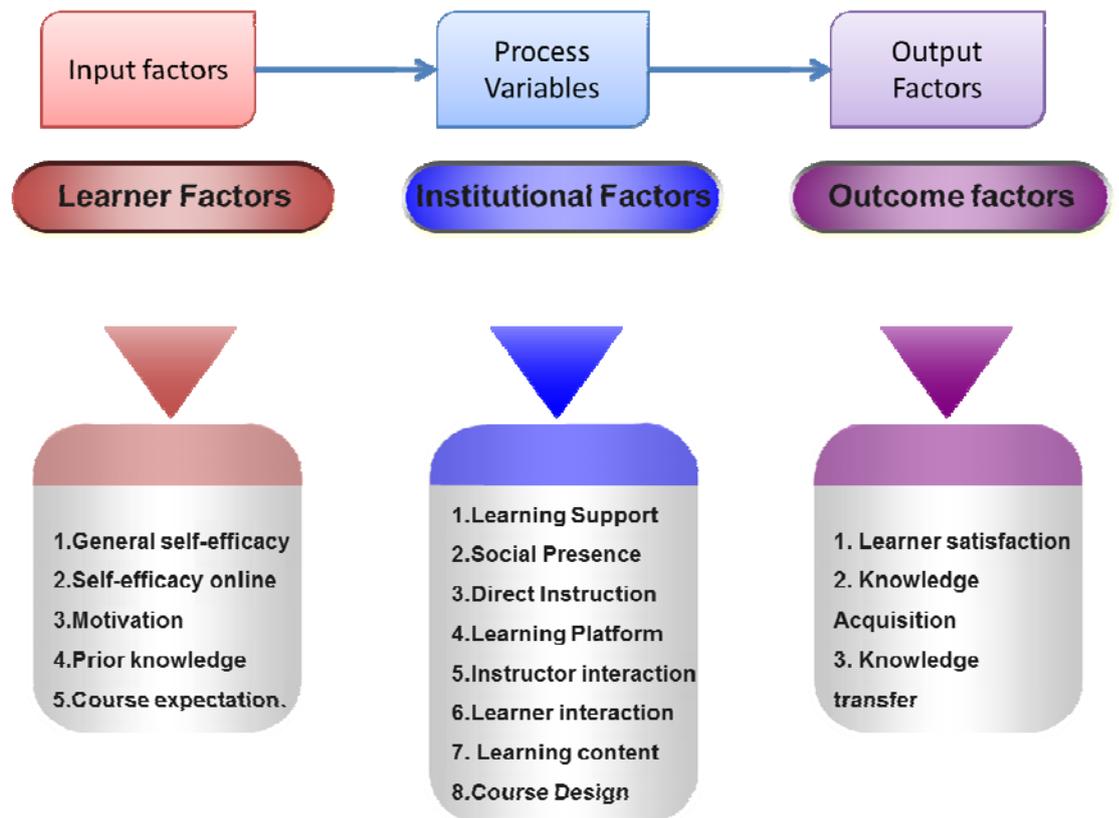


Figure 1. Conceptual model that comprises three dimensions: student factors, institutional factors and resulting factors.

In the next sections a review of the importance of the factors included in the model will be presented

### 2.2.1 Learner Factors

Learner factors include what students bring to the online learning experience. In this context, there are several studies positively associating learners' factors with success and satisfaction in online learning. According to Luskin and Hirsens, (2010), self-efficacy and motivation are two of the most relevant components related with high level of achievement especially learner satisfaction, enjoyment and confidence. In this sense, a lot of literature reflects self-efficacy as a good predictor of satisfaction in face to face settings (Lee & Witta, 2001) and, more specifically, representative authors like Wu, Tennyson and Hsia (2010) associate a high level of individual computer self- efficacy with a high performance in e-learning. Motivation in online courses as another key factor directly associated with attainment has been

studied with learners and instructors (Roca & Gagne, 2008). The two relevant factors, students' self-efficacy and motivation, comprise also of a significant interrelationship between them (Law, Lee & Yu, 2010). Likewise, studies carried out about more influential issues on learning process and products, in general, found different characteristics such as computer and internet experience, student's background in the subject and their expectations about teachers and teachers' expectations of learners and the ones from teachers on them (Chu & Chu, 2010; Sun et al., 2008). Following the model selected in this study, learner factors are represented by general self-efficacy, online self-efficacy, motivation, prior knowledge and course expectation.

### **2.2.1.1 General Self-efficacy**

Bandura (2001) explains that self-efficacy is the ability to organize and implement the necessary actions to pursue goals. Perceiving self-efficacy gives the confidence the person needs to perform specific actions to meet the established objectives.

Bandura (1986, p.25) carried out a thorough study which examines the relationship between learning and self-regulation taking into account three causes or inter-related determinants: personal (cognitive-affective), behavioural and environmental. The latter model is defined by Bandura as "the relationship between what people think, believe and feel about how they behave". This model dismissed the interrelated classical cognitive research which claimed that the influence of environmental and behavioural factors have a minimal effect in human thought and the process of constructing reality.

Lee and Witta (2001) in a longitudinal study found that self-efficacy is also a significant predictor for student satisfaction. On the other hand, Zimmerman and Schunk (2003) claim that self-efficacy serves as a predictor for academic performance in online courses. Also, Chu and Chu (2010) recently found a significant relationship between self-efficacy and e-learning outcomes. They found that students who are patient and persistent in their academic work reported greater satisfaction.

### **2.2.1.2 Online Self-Efficacy**

According to Bandura's sources of efficacy information (1977), self-efficacy is related to a specific situation or context but it could be applied by learners to other contexts that are closer to them, for instance, educational context. Learners are influenced by previous success experiences in online or face-to-face courses. They developed self-efficacy with success in previous experiences of learning systems, online learning technologies and instructor feedback (Bates & Khasawneh, 2007). These factors influenced self-efficacy and can be improved by giving learners control over their learning environment (Luskin & Hirsén, 2010).

The sense of learner control improves performance and learning outcomes as satisfaction (Luskin & Hirsén, 2010). Chang and Ho (2009) found that online learners with control over the learner environment. For example, learners can choose what, when, where, and how to learn, this fact enhance self-efficacy levels. Taipjutorus, and colleagues (2012) found positive correlation between learner control and online self-efficacy. These findings suggested that online learners that are provide with control over the course, feel more comfortable and confident in online environments.

### **2.2.1.3 Motivation**

Motivation can be defined in very different ways adopting numerous aspects. Kawachi (2002), who has worked in this field for a long time, defined it as the grade of willingness of a person to take action towards an objective. Previous and more recently specialists understand the motivation in this same general framework (Hartnett, St. George, & Dron, 2011).

More specifically, motivation can be of two types: intrinsic and extrinsic. Intrinsic motivation refers to the internal thought processes such as curiosity and achievement. When a person has clear goals and how to meet them, they are more motivated, whereas extrinsic motivation refers to external rewards such as bonus, promotions, and appreciation on one's work. These awards are found extrinsically and are tangible.

According to Kim (2004), motivation has two characteristics to be considered in online courses:

The first is the value that learners assign to the task, for instance: Is the assigned activity useful? Does the learner have control over the activity? What will the award be?

The second one includes expectations the learner has to successfully complete the course, for instance: Do students count with enough skills and knowledge? Do they have previous experience of success in other courses? Are course tasks too difficult?

One of the greatest goals in online university education is promoting and strengthening motivation as a result of lack of interaction in face-to-face settings.

Chen and Jang (2010) found that learner motivation has direct effect on perception and satisfaction of learning. When learners perceive they have met the expectations they had set at the beginning of the course and, if tasks were successfully completed throughout the course, they will show high levels of satisfaction.

#### **2.2.1.4 Prior Knowledge**

The importance of prior knowledge is out of any doubt. It is in the core of the teaching and learning understanding process and makes the difference in the level learner knowledge significance. Likewise, the complex and inferential concept of zone of proximal development (ZPD) is based on that individual knowledge (Vygotsky, 1978). From the prior knowledge the instructor can scaffold students to arrive to a more complex knowledge.

Kang, Park, and Choi (2006) investigated the role of prior knowledge and social presence related to satisfaction and achievement in an online teacher training program. They found that IT ability of prior knowledge and cohesiveness of social presence significantly predict satisfaction.

Recently, Butcher and Sumner (2011) analysed the relationship between different levels of learners' prior knowledge and behaviour in online courses and

acquired knowledge. They found that if learners count on prior knowledge, they will learn more and use more tools and resources. On the other hand, when learners had very high levels of knowledge, they related it to a low frequency of use of resources and low acquisition of knowledge during the course.

#### **2.2.1.5 Course Expectation**

Learners and instructors have different expectations and needs based on their online learning experience. Their satisfaction with prior courses, either traditional or online, will determine expectations that learners will have in a new online course then these attitudes, needs and expectations will influence learning outcomes.

Cooper, Dempsey, Menon and, Millson-Martula (1998) defined learner needs are generally more objective. Normally they are based in logic reasons. If a learner does not do, their need will difficultly follow their objectives. However, learner expectations are very probably suppositions about something that happens. Their expectations are based on prior online and face-to-face educational experiences.

In the context of an online course, learners have assumptions about the performance and quality of the course. Learners will perceive quality if their expectations are taken in account (Steyn & Schulze 2003). Learners selected an online learning course because it fits their needs in time and place. Learner expectations have to receive adequate support from instructors and the institution in order to avoid the uncertainty (Swan, 2002).

Mupinga, Nora, and Yaw (2006) in a study with online learners from Indiana State University found that the top three expectations of the online learners were: communication with the instructor, instructor feedback, and challenging online courses. The majority of learners expected the trainer to communicate with them. They expected to receive the adequate guidelines and structure of the course if they feel confused or do not understand something in the course. They expected regular contact by a variety of communication varieties with instructors (e.g., email, online chat, face-to-face, etc.).

The second expectation was instructor feedback because learners expected a timely feedback from instructors; this echoes Choy, McNickle, and Clayton, (2002).

The third important expectation was challenging online courses, learners expected the online courses to be comparable in demand to the traditional face-to-face, and expected clear requirements about the amount of coursework during the course.

## **2.2.2 Institutional factors**

The institutional dimension comprises factors that the university offers students to help them in their academic performance. Each factor has an influence on satisfaction learning and students' application of knowledge.

### **2.2.2.1 Learner Support**

In the e-learning context, learners know they can potentially get assistance any time, so learner support is related to scaffolding process in a constructive environment and not only by demand. Nevertheless, support to learners is traditionally connected with use of technology used in the different systems of the institution. Providing enough support to learners to successfully fulfil tasks in online courses is positively associated with their satisfaction. Tanner, Noser and Totaro (2009) carried out a comparative study about learners and instructor assumptions online finding that, from both sides point of view, it is important to provide training, technical support and accessibility in resources. More recently Teo (2010) suggests that computer training; teaching assistant support and program flexibility are significant for learners' satisfaction.

### **2.2.2.2 Community of Inquiry**

Information technologies allow communication between learners and instructors in synchronous and asynchronous ways in order to make interaction and eliminate barriers of time and space. In a learning environment, these interactions allow the creation of a community where learners share information and ideas, ask for reasons and clarify opinions and propose suggestions about the topic submitted. This was called Community of inquiry (COI). Although the term was suggested originally by Lipman (1991). It was developed and proposed by Garrison, Anderson,

and Archer (2000). They proposed the importance of the community of learners in order to assist reflections and critical thinking. The social environment will improve the process of construction of knowledge by sharing and comparing diverse perspectives applying to personal experiences and contrast with prior knowledge allowing to build it.

Garrison and colleagues (2000) proposed three presences in the COI based on their proposed conceptual framework and their study on the content analysis and coding of computer conferences call transcripts, which are social, teaching and cognitive presence. These presences are intersecting and in a process of interaction that will determined the quality of online learning experience.

### ***Social Presence***

The interest in studying social presence is the need to promote a sense of belonging among students, teachers, curricula and universities. This factor promotes social relations, affectivity, gratitude, humour, etc., all of them extremely important for well-being and learning.

Social Presence refers to the degree to which online students feel emotionally connected to each other as real people. Furthermore, social presence refers to the learner's need to feel in communication with their classmates and recognizing them as real people who share common interests and needs as well as some online tasks as discussion forums. This key factor has also been traditionally analysed founding that social presence is a key factor to know satisfaction (Gunawardena & Zittle, 1997). They also found that satisfaction has a direct correspondence with the way learners perceive learning and teacher development (Richardson & Swan, 2003). It can be said that having a low social presence can turn into a problem reflecting bad results and poor learning experience. Swan and colleagues (2008) developed and validated a survey for measuring student perceptions of the three presences (social presence, cognitive presence and teaching presence) of the Community of inquiry (CoI) framework. They found that social presence is really a necessary precursor of cognitive presence and suggested that it has implications on learning outcomes.

Social Presence is the most studied of the Community of Inquiry (CoI) model (Garrison, Anderson & Archer, 2000). This model provides us with a theoretical framework for research on online teaching and learning. It explains that, in order to build an effective online learning environment, it requires developing a sense of community and thus to develop meaningful and deep learning.

The CoI model holds three important elements that should be taken into account to develop an online course: social presence, cognitive presence and teacher presence. Likewise, social presence was analysed by Richardson and Swan (2004) and Dillon and Guawardena (1995), who found that social presence have a direct correspondence between how students perceive learning, teacher performance and satisfaction in the course.

### ***Cognitive Presence***

Even this type of presence is not specifically tackled in this study, cognitive presence with teaching presence build an integrated model with social presence. Its aim is to analyse how students understand and construct meaning and develop critical thinking. This factor promotes the exploration of concepts and phenomena. Simultaneously, this knowledge is added to prior knowledge and creates a new meaning and a new vision of the world.

### ***Teaching Presence***

This factor provides students with a cognitive and social process through good design and development of the course. Teachers interact with learners to give guidance on the course activities and answer to questions when they arise. It also promotes interaction among learners to share knowledge and experience that contribute to the learning experience.

Teaching presence is in this study distributed in other factors, mainly: instruction, instructor interaction and course design.

### **2.2.2.3 Learning Platform**

Teachers tend to become familiar with places where the teaching-learning process takes place. The case of changing the physical location of a traditional class room to a learning platform becomes a challenge where several characteristics should be taken into account.

Technology used for online tasks, either in synchronous or asynchronous communications varies and until the instructor gets used to it, he may conduct a lesson with quality and confidence to achieve the learning objectives he has set.

Instructor should be aware of resources the learners count on from the basic use of computers for online education to the use of an e-learning platform to be able to follow the course.

There are different platforms (Course Management Systems, CMS , Learning Management Systems, LMS or Virtual Learning Environments, VLE) which are systems designed to assist in the administration of resources and educational activities, especially by helping instructors and learners to keep track and manage all activities and resources. An LMS allows instructors to manage their classes, tasks, activities and tests in an accessible virtual environment. Learners can access LMS anytime and anywhere. There are several examples of LMS, from the ones using closed source software (Blackboard), to the ones using open source software (Moodle), which has been very successful in different universities.

The e-learning environment has an important role since students have meaningful educational experience with well-designed courses and learning materials and it is important to match the right technology with the right curriculum and learning objective (Kidd, 2010). Chiu et al. (2007) found that functionality, ease of use, reliability, flexibility, data quality, portability and integration have a positive effect on a learner's satisfaction.

### **2.2.2.4 Instruction**

Instruction refers to the instructional approach to learners to present and develop the syllabus of the course to learners. Eom, Wen and Ashill (2006) found a significant correlation between instruction and satisfaction.

The instructor's profile as well as their knowledge on technology and different teaching styles to interact with learners, significantly influences e-learning outcomes (Ozcan & Koseler, 2009). Likewise, Oomen-Early and Murphy (2009) observed a great influence in satisfaction and perceived effectiveness online when teachers' count on updated and enough knowledge in their area of expertise. Instructors also need to count on control of technology tools and course contents to adapt them to different learner's profile (Sun et al., 2008).

#### **2.2.2.5 Instructor Interaction**

Swan (2002) and Eom, Wen and Ashaill (2006) identified a link between learners and instructors attendance, feedback interaction and perception of knowledge likewise they also found a significant correlation between facilitation and satisfaction. However, they did not observe any significant connection to knowledge perception. Time that instructors take in replying has significant influence on learners' satisfaction and learning. This is revealed when they have a doubt or a problem along the course and instructors encourage them to continue with the course and the latter reply on time to their answers and manage activities. When instructors take long time in replying or they do not do, it has a negative impact in satisfaction and knowledge acquisition of learners (Eom et al., 2006). Also, instructors' attitudes towards e-learning positively influence learners in the way they participate in learning activities and they are major actors in learning activities.

#### **2.2.2.6 Learner Interaction**

Cabero and Llorente (2006) mentioned that interaction in online education will always refer to a human relationship, either among learners or between learners and instructor.

When there is a relationship between learners and resources or technological means, it has been called interactivity. It occurs at different levels depending on the mean in use.

Given the use of the Internet in e-learning, interaction mainly takes place through machines and on campus education is not needed for effective interaction.

This interaction usually takes place through the use of written texts and images which help us to create a discourse that can be prepared and refined.

Online interaction is not necessarily better or worse than on campus education interaction. Likewise, inspired by the relevant work of Moore (1989) about types of interaction and other work (Simonson et al., 2012), Cabero and Llorente (2006) explained that different levels of interaction in online education take place and they all can be effective.

The main kind of interaction revealed are collective interaction between learners and instructor, individually between learner and instructor, among learners individually or collectively, and all such communications can be unidirectional or bidirectional.

Lapointe and Gunawardena (2004) pointed out that learners who interact more frequently show a high level of satisfaction. They also addressed that social interaction is very important for cognitive development and for developing higher thinking skills and instructors have to develop strategies for improving the relationship with learners.

On the other hand, Swan (2002) and Picciano (2002) found that interaction among learners and between them and instructors, influenced learners' satisfaction and their perception of knowledge in the course.

Wanstreet (2006) reviewed literature related to the construct of interaction in the educational technology and distance education literature. He stated various conceptual and operational definitions of "interaction": interaction as an instructional exchange, interaction as computer mediated communication, and interaction as a social/psychological connection and all of them need to be taken into account for successful online learning.

#### **2.2.2.7 Learning Content**

Course content is a central element in any e-learning course. The choice of the type of content that will be used depends on various aspects of e-learning program and instructional design in use. For example, contents can be different if the course is only online or based on blended learning or if they want to use resources for learners

with different learning styles. The choice of contents presented to learners will influence learners' interaction aspects with peers and with the instructor. That content is easier to understand in different cultures than the term of competence which is more relevant to knowledge building, predominantly in learners.

The instructor is the main responsible for posting content that matches with course objectives. Content should be relevant, yet enticing enough to learners that they retrieve it from the repository, read it, interpret it and then discuss it with other learners in an online interactive setting. Levine (2006) goes as far as to say that the content should “empower” (p. 22) students to express their interests and interpretations. Content must also be accessible to all learners regardless of their connection capabilities.

#### **2.2.2.8 Course Design**

In order to accomplish an effective online education there must be both, an effective instructional design and a process using adequate principles in educative practice. If the design is correct, then it will positively influence instruction. Simonson and colleagues (2012) ascertain that instructional design is based on a system that is influenced by several actors working together for a common purpose. These actors are faculty, staff, administrators and learners and at the same time are based on eight key components: curriculum, instruction, management and logistics, academic services, strategic alignment, professional development, research and development and program evaluation. Due to its nature, design of online courses must consider time flexibility, location, methods, participation in activities and presentation of the materials with the aim of creating a more cooperative learning environment (Simonson et. al., 2012).

Also Simonson and colleagues (2012) reviewed the Knowles's andragogy and propose a number of characteristics for taking into account for course design in distance learning focus in adult learners:

Distance learning courses should include clear and concise course descriptions, learning objectives, resources and timelines for contributions by learners;

The learner's needs and interest should be the foundation in which the course is designed;

The learning environment should encourage and promote respect, dignity, and support - when criticism is a part of the discussion it should be directed at the content and ideas rather than the individual

Based on learning design principles, Conole (2007) lists six important reasons why good learning design should be made and which are important for every online learning context. These are:

1. It can act as a means of taking into account instructors' designs in a format that can be tested and revised by developers. That is to say, to use a common language in understanding learning activities.

2. It provides a means by which designs can be reused beyond the philosophy of sharing.

3. Learners can be guided through the process of creating new learning activities.

4. A revision way to check syllabus design is made.

5. It can highlight political implications for staff development, resource allocation, quality, etc.

6. It helps learners in complex activities and guiding them through the activity sequence.

### **2.2.3 Outcome Factors**

Outcome factors include what students receive from their online learning experience. In this context, there are several studies positively associating learners and institutional factors with success and satisfaction in online learning.

In the model we have defined a set of three factors to define learner outcomes due to the complex nature of online learning experience success. It is a tiered list, being that the first outcome is learner satisfaction, defined as overall enjoyment of the learning experience despite not learning the material. Knowledge acquisition takes it a step further in which the learners can recall information learned in the course. The

final tier is ability to transfer, defined as the expectation that learners will apply the knowledge gained in the course to future situations.

Following the model of online success created by Barbera and Linder-VanBerschot (2011), the outcomes in online learning are composed of learner satisfaction, knowledge acquisition and knowledge transfer.

### **2.2.3.1 Learner Satisfaction**

One factor that often arises in the literature as an indicator for learner's success in e-learning is satisfaction with the course. Levy and Murphy (2002) stated that staff, researchers and instructors should have a thorough understanding of this factor to maximize effectiveness of online courses. This factor, also considered as the key, has been studied to identify factors that influence it too. Gunawardena and Zittle (1997) found that social presence is a key factor to measure satisfaction as we have already pointed out.

Despite these efforts, there are still challenges to obtain greater effectiveness in e-learning based programs. Some studies (Leidner & Jarvenpaa, 1995; Dillon & Guawardena, 1995) consider three main factors affecting effectiveness in e-learning: technology, characteristics of the instructors and of learners.

Allen, et al. (2007) found that time participation is a key factor to measure satisfaction and learning gains. Furthermore, Levy (2007) determined that student satisfaction was a critical factor in successful completion in online courses. Levy studied attitudes of graduate and undergraduate online learners.

Puzziferro (2008) stated that successful in online learning is related to the learner's satisfaction. Likewise, Puzziferro and Shelton (2008) included time on task as a good practice to emphasize the quality in their model for developing high-quality online courses.

Components of CoI framework (social presence, teaching presence, and cognitive presence) have been correlated with learner satisfaction, (Arbaugh, 2008; Arbaugh et al, 2008; Richardson & Swan, 2003; Shea, Pickett, & Pelz, 2003; Swan & Shih, 2005). Similarly, different previous literature references, shown earlier in this chapter, tackle satisfaction related to learners and teachers.

### 2.2.3.2 Knowledge Acquisition

According to Mayer (2002), significant knowledge is achieved when learner can remember, at least, the most important concepts of the lesson and when they can use this information to solve and suggest solutions to problems, and also to use this knowledge to understand new concepts and use it in new circumstances and problems. In this case, according to Mayer, the learner constructs knowledge and is different from “no learning” and “rote learning”. Meaningful learning is personal and cannot be directly observed.

Mayer (2005; see also Anderson & Krathwohl, 2001) proposes six cognitive processes of which the first is called Remember and corresponds to retention of knowledge. The other five are closely related to knowledge transfer and include the concepts Understand, Apply, Analyse, Evaluate and Create.

Mayer provides process with six steps for acquisition of knowledge. However, his model is based on a cognitive paradigm. This study is based on personal and social construction of knowledge.

*Remember* involves querying important knowledge in long-term memory and mainly involves two cognitive processes: Recognizing and Recalling. These cognitive processes are important when performing in more complex tasks involving significant knowledge acquisition and problem-solving.

The recognizing process is when learner identifies knowledge in his long-term memory and makes a relationship with the materials in class. This process is also called identifying.

The recalling process is when the learner evokes specific relevant knowledge from his long-term memory. This process is called also retrieving.

Understand is achieved when learners are able to construct meanings using instructional resources. They understand when connections between new knowledge and prior knowledge are being built. That is to say that new knowledge becomes part of existing schemes.

Nowadays, although it is also divers and controversial, it seems that there is a consensus in distinguishing types of knowledge (sometimes labelled with different names): factual or conceptual, procedural and metacognitive/strategic/conditional/

Anderson and Krathwohl (2001) provides an in-depth analysis. Moreover, knowledge acquisition is also connected with instructional design, teaching strategies and enhanced competences (Sendag & Odabasi, 2009).

Gunawardena, Lowe and Anderson (1997) proposed a social constructivist model with five phases of construction of knowledge (see Table 2.3). They suggested that in a learning environment, where resources are effectively used and where instructors promote interaction between learners, there is a success factor of construction of knowledge. Table 2.3 summarizes the phases that can be used to analyse the construction of knowledge, may not use linearly the five phases showed.

Table 2.3 Five Phases in the Active Construction of Knowledge. Analysis Model from Gunawardena et al. (1997)

Phase	Operation
1 Sharing/comparing information	<ul style="list-style-type: none"> <li>- Sharing/comparing information.</li> <li>- Statements of problems or questions</li> <li>- Statement of observation or opinion</li> <li>- Statement of agreement between participants</li> <li>- Corroborating example, clarification and/or identification of a problem.</li> </ul>
2 Discovery and exploration of dissonance	<ul style="list-style-type: none"> <li>- Identifying areas of disagreement, asking and answering questions to clarify disagreement or inconsistency among participants.</li> <li>- Identification of differences in understanding of terms, concepts, schemas, and/or questions to clarify the extent of disagreement.</li> </ul>
3 Negotiation of meaning/co-construction of knowledge	<ul style="list-style-type: none"> <li>-Negotiation or clarification of meaning of terms and co-construction of knowledge.</li> <li>-Identification of areas of agreement and proposal of a compromise or co-construction.</li> </ul>
4 Testing and modification of proposed synthesis or co-construction	<ul style="list-style-type: none"> <li>- Testing the proposed new knowledge against existing cognitive schema, personal experience, formal data, experimentation or other sources.</li> </ul>
5 Agreement statement(s)/application of newly constructed meaning	<ul style="list-style-type: none"> <li>- Summarizing agreement and metacognitive statements that show new knowledge construction and application.</li> </ul>

### **2.2.3.3 Knowledge Transfer**

The third outcome that this study focuses on is transfer learning. It is essential to understand the success of learners. According to Mayer transfer learning is “the effect of prior learning on new learning or performance” (2011, p. 20).

Knowledge transfer is the process in which the learner applies in a different context what he had learned in the course. According to Holton (2005) it is important to evaluate the application or transfer in order to identify if there is an improvement in the student performance. This transference is also been recognised as real learning incorporating learning effectiveness by itself.

Several authors (Yamhill & McLean, 2001; Holton, Bates & Ruona, 2000) explain that transfer mainly depends on three factors: learner’s characteristics, course characteristics and environmental characteristics such as characteristics of the institution and the context, supporting the latter claim. Holton (2005) indicates that transfer depends not only on intrinsic factors but also on external factors to be considered. Although both have been taken into account in the systemic model the second one is more present.

According to Mayer (2008), there are two types of transfer: transfer of learning (when the previous learning affects new learning) and problem solving transfer (when previous learning affects the ability to solve new problems).

Lim and Morris’s (2009) study showed that knowledge acquisition and transfer of knowledge are influenced by prior experiences with distance learning, specifically preferences in delivery modalities of instruction and average study.

## **2.3 PERSPECTIVE OF CULTURE IN DISTANCE EDUCATION**

Another core concept of the present research is culture although it is not the aim of the present study to explain results accurately from an intercultural perspective. That would have needed more extended data gathering and mixed methods. This study identifies and describes factors where they are found relevant. Nevertheless, findings are based in the theoretical framework and this is the reason that aims this section that can be taken as preliminary approach related to this topic.

Cultural issues have an impact on learner and institutional factors. For this reason, instructor and instructional designers have to consider it when they design an e-learning program. They have to consider point of view, beliefs and values of learner from different cultures for implementing learning activities, assessment, feedback, interactions with the instructor and peers.

The multicultural context is common in teaching and learning especially online but also in face to face context. Recently, immigration has increased and business and education institutions have been affected by the globalization and information and communication technology (ICT). Consequently, the mix of cultures, languages and cross-cultural interaction increases and this situation claims new competences for employers, employees, learners and instructors.

Despite the importance of developing skills to manage multicultural settings, there is not enough research to design courses that provide an environment that takes into account cultural differences (Young, 2008). Furthermore, Young (2008) examines subjects in countries with strong changes in new population.

Defining culture is a hard work; we have several different definitions and methodological assumptions. Researches from different perspectives give us interesting definitions.

### **2.3.1 Definition of culture**

Cultural issues have an impact on learner and institutional factors. For this reason, instructor and learning designers have to consider them when designing an e-learning program. They have to take into account participants' point of view, beliefs and values of learners from different cultures for implementing learning activities, assessment, feedback, and interactions with the instructor and peers.

Finding a complete definition of culture is difficult because each author has different assumptions. There are several models of culture related with education that have been developed to explore diverse learning contexts and learners with different cultural backgrounds, and provide a framework for cross-cultural research and analysis.

Hall explains that “culture is not genetically inherited and cannot exist on its own, but is always shared by members of a society” (Hall, 1976, p. 16). Furthermore, the study proposed several dimensions of culture, high- and low- context cultures, time and space based on the extent to which communication is carried by words or is embedded in the context in which individuals, groups and societies use the meanings, and experienced the world (Hall, 1983).

Hofstede (2001) defines culture “as a collective programming of the mind that distinguishes members of one group or category of people from another” (p. 9). Furthermore, he suggests that culture is a pattern of thinking, feeling, acting and it becomes embedded in people’s psyches. These patterns start in the family and continue throughout lifetime in all contexts where people live, from primary school to the university, at work, in the community activities and neighbourhoods. According to Hofstede, culture belongs to a category or group of people and it differs from personality and human nature (see figure 2).

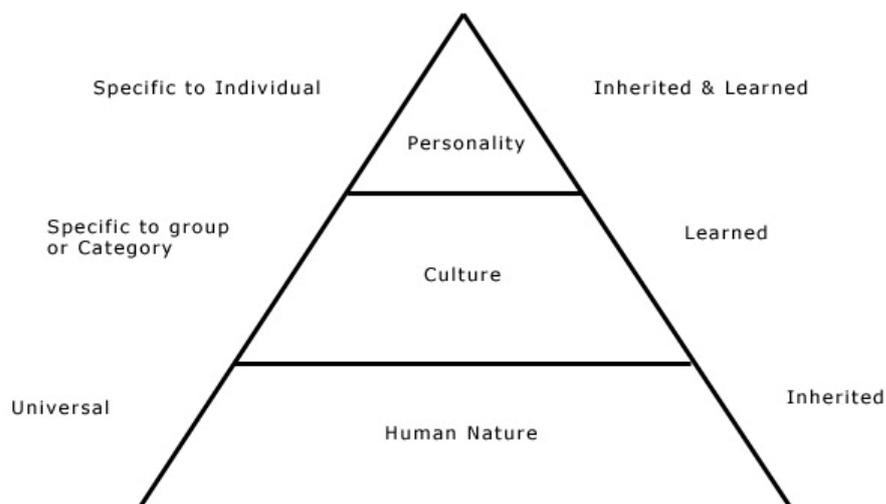


Figure 2. Three levels of uniqueness in mental programming (Hofstede 2001). Source: Hofstede G. (2001). *Cultures consequence: Comparing values, behaviours, institutions and organizations across nations*. 2ed, SAGE, California.

Adler (2002) defines culture as a way of life of a group of people, the configuration of all the more or less stereotyped patterns of learned behaviour which

are handed down from one generation to the next through means of language and imitations.

House and colleagues described culture as “a set of parameters of collectives that differentiate the collectives from each other in meaningful ways. Culture is variously defined in terms of several commonly shared processes: shared ways of thinking, feeling, and reacting; shared meanings of identities; shared socially constructed environments; common ways in which technologies are used; and commonly experienced events including the history, language, and religion of their members” (House et al. 2004 p.15).

### **2.3.2 Culture and online education**

Kim and Bonk (2006) examined cross-cultural differences among undergraduate students from Finland, the United States in interconnected conferences. They found Finnish students were more group-focused as well as reflective and, at times, theoretically driven, and U.S. students more action-oriented and pragmatic in seeking results or giving solutions. They added a Korean group in order to have more diverse cross-cultural comparisons, and they students were more socially interactive, sharing personal feelings and concerns.

On the other hand, Holtbrügge and Mohr (2010) used Hofstede framework dimension to investigate the relationship between cultural values and the learning style preferences of students of business administration from 939 learners studying at universities in Germany, UK, USA, Russia, Ireland, Spain, the Netherlands, Poland, China, and the United Arab Emirates. They found that learning style preferences vary with individuals’ cultural values.

Swierczek and Bechter (2010) also used Hofstede framework in their study that involved students of three online universities from three countries, the Netherlands, Singapore and Vietnam, they found significant differences between the regional groups. East Asians are significantly more involved and active in e-learning than their peers in Europe and South Asia. This suggests that the high-context learning culture has a positive influence on e-learning involvement.

Parrish and Linder-VanBerschot (2010) proposed the cultural dimensions of learning framework based on various cultural frameworks that include Hofstede's Cultural Dimensions research.

Cultural dimensions of learning framework (CDLF) comprise eight cultural parameters (see Table 2.4) regarding social relationships, epistemological beliefs, and temporal perceptions. The CDLF is a tool to examine the range of preferences existing among learners. Knowing cultural preferences can guide instructional designers and instructors through design and development online courses taking into account culture-based considerations.

Table 2.4 The Cultural Dimensions of Learning Framework (Parrish & Linder-VanBerschot, 2011).

Social Relationships	Equality and authority
	Individualism and collectivism
	Nurture and challenge
Epistemological Beliefs	Stability seeking and uncertainty acceptance
	Logic argumentation and being reasonable
	Causality and complex systems (Analysis and holism)
Temporal Perceptions	Clock time and event time
	Linear time and cyclical time

### 2.3.3 The Hofstede's dimensions

Hofstede framework is one of the most relevant works that frames cultural contributions like the one we are looking for. Hence, this study uses Hofstede's cultural dimensions as the basis for the analysis and comparison of the cultural characteristics of learners from 4 countries: China, Mexico, Spain and USA (see Tables 2.5 and 2.6). Hofstede's cultural dimensions have been used as a valid framework in cross-cultural online learning research (Wang, 2007) and include a profile of education actors (learners, instructors and institutions) in the four countries of our study.

In the 1970s, Hofstede got access to a large survey about values and beliefs of people in 72 countries around the world. In that moment Hofstede started to work on his model of five dimensions, these were developed consistent with human acting, thinking and feeling. In sum, the five cultural dimensions of Hofstede are described as follows:

1. Power Distance, related to the degree to which members of a society accept and expect that power is distributed unequally. A large power distance society accepts the inequity.

2. Uncertainty Avoidance, related to the degree to which a society feels the level of stress by unexpected situations. Societies with high uncertain avoidance ranking minimize the possibility of ambiguity situations.

3. Individualism versus Collectivism, related to the relationship between individuals and primary groups. People are more likely to integrate in countries with high collectivism ranking.

4. Masculinity versus Femininity, related to the degree and distribution of values between the genders of a society. People are more assertive or competitive in country with a high Masculinity Ranking.

5. Long Term versus Short Term Orientation referring to the degree of focus for society level of effort in time.

Hofstede's Model has also been criticized by different authors for the external validity of his work and because his dimensions are very basic and claimed that do not show the real national culture because a country comprises different cultures and characteristics by region (Jabri, 2005; Shattuck, 2005; Graen, 2006). In spite of receiving criticism, Wang (2007) used Hofstede's dimensions and used them as a valid framework for investigating culture differences in other studies in education and several researches have used this framework to investigate intercultural interactions (Gudykunst, Chua & Gray, 1987; Olaniran & Stewart, 1996; Roach & Olaniran, 2001; Sanchez-Franco, Martinez-Lopez, & Martin-Velicia, 2009).

### 2.3.4 The Country Index Scores of the Cultural Hofstede Dimensions

Countries considered for this study are representative of different cultures. In China, new technologies are emerging and university learners are exposed to the influence of western culture. In Mexico, digital natives and the development of the infrastructure of telecommunications have influenced the exposition to multicultural society and there are an important digital divide. In Spain, the prior exposition to technology, online education and the exposition to other cultures are changing the ways of education.

Table 2.4 shows index scores of Hofstede cultural dimensions of the four countries considered in this study. According to these scores, differences between countries are significant and the explanation about each dimension is presented in the following sections.

Table 2.5 Country Index Scores of the Cultural Dimensions.

Dimension	Power Distance (PDI)	Individualism		Uncertainty Avoidance (UAI)	Long term orientation (LTO)
		- Collectivism (IDV)	Masculinity - Femininity (MAS)		
Spain	57	51	42	86	19
United States	40	91	62	46	29
China	80	20	66	30	118
Mexico	81	30	69	82	0

Source: Hofstede G. (2001). *Cultures consequence: Comparing values, behaviours, institutions and organizations across nations*. 2ed, SAGE, California.

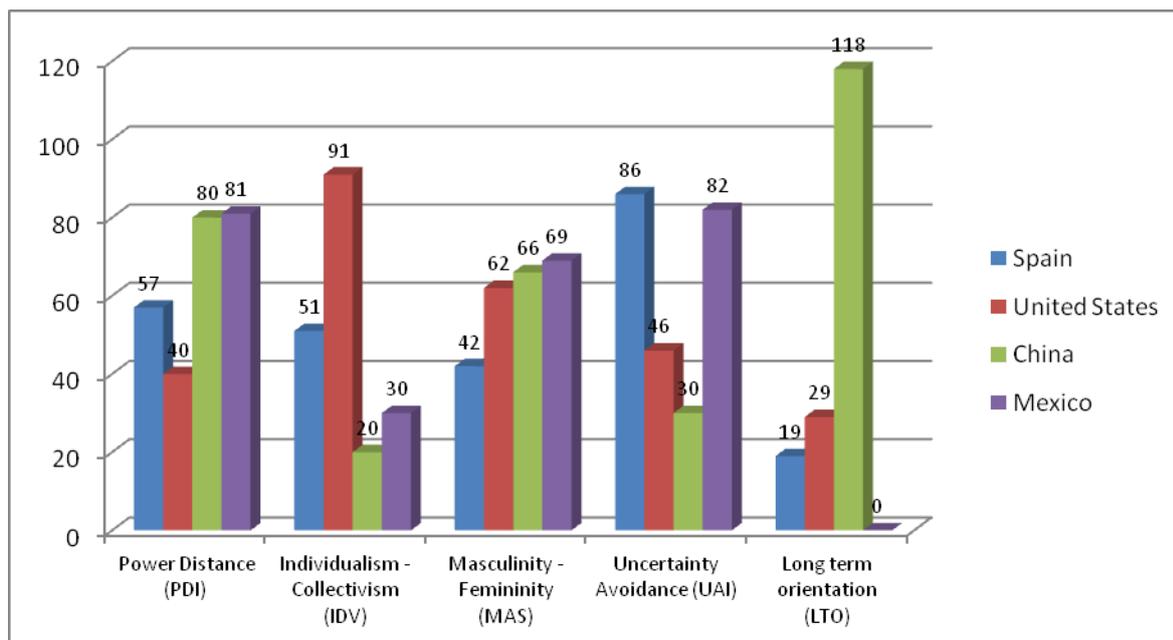


Figure 3. Country Index Scores of the Cultural Dimensions of four nations from this study.

### 2.3.5 Power Distance

Learners and instructors from Mexico and China have a large power distance index. It means that people from these countries accept and expect that power is distributed unequally. Mexico scores higher than other Latin American countries and in China the influences of Confucianism is important and allow the inequity in the society. In both countries relationships are unequal i.e., instructor-learner, master-disciple, father – son, husband –wife.

Students are dependent of teachers and show respect to them. Education is strongly in charge of the teacher.

Normally, instructors initiate communication in class, giving rules, information and following the tasks until finished.

Instructors are viewed as gurus and their role is to transfer their knowledge.

On the other hand, Spain and USA have a small power distance index. It means that learners are treated as equals by instructors and learners can treat instructors as equals too.

Education is mainly focused on learners more than on learners and frequently learners start the communication in class. Here, professors are experts who transfer impersonal truths.

### **2.3.6 Individualism vs. Collectivism**

Mexico and China have a high index of collectivism. These societies believe that the purpose of education is learning how to do things; individual initiatives of learners are discouraged and collective initiatives are encouraged.

Learners normally do not speak up in class; they only speak up when they are sanctioned by group.

Learners normally are organized and they work in groups.

Degrees provide entry to a higher status group.

USA and Spain are more individualistic societies; the purpose of education is learning how to learn, individual initiatives of learners are encouraged and they expect to speak up in class for participating, sharing ideas or needs.

Learners are organized according to their interests.

Degrees increase what the learner has as an income and also increase the self-respect.

### **2.3.7 Masculinity vs. Femininity**

USA, China and México have a high index of masculinity meaning that these societies have a high degree of gender differentiation. The society and power structure are mainly dominated by males and values associated with masculinity.

Students from these countries also admire brilliant instructors. Normally, they treat to be the best learners and they are used to have competition in class. Instructors heap praise upon good learners, students over rated their own performance.

Schools of those countries encourage competitive sports and promote wide participation as a part of the curriculum. Fail in school is a disaster for learners.

Spain has a high index of femininity. This means that in this country, differentiation and discrimination between genders is low and dominated values are associated with femininity as modest and caring.

Learners from this country like friendly instructors, normally learners treat to be on the average, the over-ambition is unpopular. Instructors give verbal feedback to weak learners. Students under-rate their own performance.

Schools promote competitive sports and promote wide participation out of the curriculum. Fail in school is a minor incident for students compared with the other three countries.

### **2.3.8 Uncertainty Avoidance**

Spain and Mexico have strong uncertainty avoidance. Learners from these countries want to know right answers and they demand all the right answers from instructors. Learners and instructors can express emotions in class.

There is pressure among learners to be in or to be cast out.

Normally instructors can inform parents about their learners.

China and USA have weak uncertainty avoidance. Learners from these countries want good discussions, instructors could say “I don’t know” and show the way to find answers. There is tolerance for differences in class.

Normally, instructors involve parents in school activities.

### **2.3.9 Long Term orientation**

China is a long-term orientation country. Learners attribute success to effort and failure to lack of effort. Studying hard is the rule; learners have high performance in mathematics and have talent for applied concrete sciences. Children learn to save.

USA and Spain are short-term orientation countries. Learners attribute success and failure to luck and occult forces. Enjoying school is norm. Learners have low

performance in mathematics; they have talent for theoretical abstract sciences. Children learn to spend. Mexico was not included in the study of this dimension.

Up to this point, we have written the presentation of the theoretical framework that provides us with a comprehensive setting to understand online learning success and also allows us to go into the methodological section with enough solvencies to attempt remarkable contributions in the field.



# **METHODOLOGICAL FRAMEWORK**



## 3.1 INTRODUCTION

This chapter includes a description of the setting, research design, population and sample, instruments, data collection, procedures and data analysis.

The first purpose of this study was to identify the main factors that contribute to success in asynchronous distance learning courses from learners and instructors perspectives. The selected methodology for this first goal was guided by a reviewed replication of a prior research project that was conducted by Barbera and Linder-VanBerschot (2011).

The second research goal was to investigate the relationships between learner and institutional variables and outcome variables in asynchronous distance learning courses from students and teachers perspectives, as well as the extent to which the learner and institutional factors are predictive of the outcome variables. Based on the multiple regression analysis, several variables were identified to be predictors of student success in online learning environments

The third research goal was to contrast the results found at the UPAEP (México) with results found in three universities in three different countries, the University of New Mexico (USA), the University of Peking (China) and the Open University of Catalonia. (Spain).

## 3.2 THE SETTING

This study took place in the Online System of the Autonomous Popular University of the State of Puebla in Mexico (UPAEP) in the spring of 2012. Most of the courses were taught in Social Science Department. A detailed description of the research design for this study is done in the following section. For the comparison of the results between universities, the data were taken from online learners and instructors, mainly from Social Science Departments at the UPAEP (México) and from a study conducted by Barbera and Linder-VanBerschot (2011) at the University

of New Mexico (USA), the University of Peking (China) and the Open University of Catalonia. (Spain).

### 3.3 RESEARCH DESIGN

To develop this research, a quantitative descriptive-correlational research design was used (Bisquerra, 2004; Campbell & Stanley, 1966) and the data were collected with the survey instrument for identifying features and variables involved in the performance of students in e-learning developed by Barbera and Linder-VanBerschot (2011).

In order to analyse and answer the research questions, several statistics techniques were used (reliability analysis, one-way ANOVA, non-parametric correlation analysis, Spearman Rho correlation analysis and stepwise regressions), numerical and graphical procedures were used to report the results and tables and charts were used to present findings.

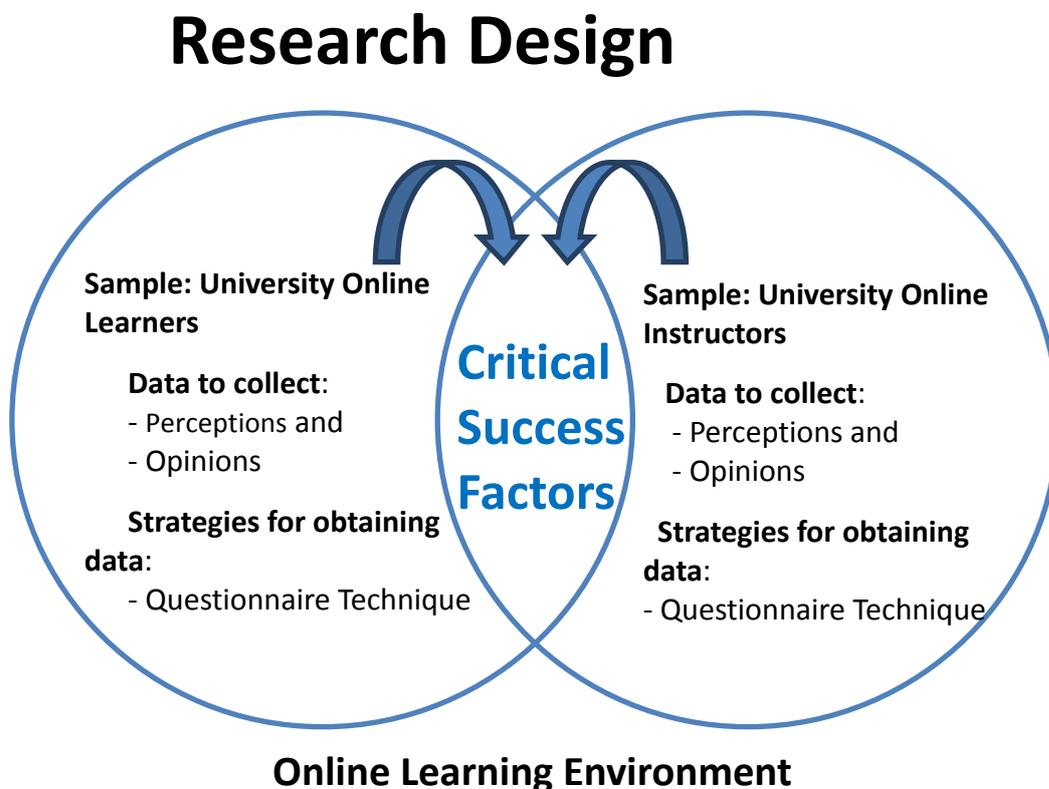


Figure 4. Research Design

### 3.4 SAMPLE

The selection of the setting was chosen from universities that could be considered representative in the use of online learning in Mexico. The selection of participants was done using a purposive sampling procedure (Bisquerra, 2004 Fraenkel & Wallen, 2003). This sampling aimed to include diversity of learners and instructors and allowed the constructs of knowledge acquisition, learning satisfaction and knowledge transfer to be investigated in the online learning context. Then a representative portion of the population was selected and analysed; from this sample, inferences on the population were made. As Bisquerra (2004) suggests, the aim of using this sampling procedure is to obtain a statistical profile of the population. For this, probabilistic assumptions about the behaviour of different variables, such as demographic, perception, conception, etc. were made.

This study took place in the Online System of the Autonomous Popular University of the State of Puebla in Mexico (UPAEP). The responsible for undergraduate online programs was contacted in order to request for volunteers, learners and instructors (see Appendix 2: Request for learners, and Appendix 3: Requests for instructors).

The setting was selected for the following reasons:

- 1) The representativeness of the university for online students in the country.
- 2) The university has a large experience in graduate and undergraduate online learning courses.
- 3) The researcher's accessibility to online learners and faculty members
- 4) The researcher's familiarity with the structure and technologies of the institution's undergraduate online education programs.

The characteristics of the setting are the following:

The Popular Autonomous University of Puebla is a private university founded in 1973 and is located in the state of Puebla, Mexico.

The UPAEP offers 40 undergraduate careers (19 dual degree careers together with City University of Seattle (CityU). It also offers 33 master degrees (25 dual degrees together with Oklahoma State University), 13 PhDs, 12 special education degrees, 13 online programs (8 undergraduate and 5 master degrees), 11 certification programs and other online courses.

Selection of instructors was conducted using the following criteria: they had to be in duty of one or more courses based only on e-learning and who had availability to take part in the research.

Selection of learners was conducted using the following criteria: they had to be learners enrolled in a course completely based on e-learning and who were willing to take part in the research.

- From the university population: a sample of 229 learners who were enrolled in the course of Administration, Pedagogy or Psychology.
- From the population of university instructors: a sample of 50 instructors who taught the subjects of Pedagogy and Psychology.

The representation is done by correctly selecting the variables that are subject of study and finally making inferences to explain, predict or control of them.

### **3.5 INSTRUMENTS**

Two different strategies for collecting information were employed (see table 3.1): a questionnaire for learners and instructors to find out variables involved in the performance of learners in an online course; and the second was a semi-structured interview via Skype, a remote video communication system.

The process followed in each of the strategies is described below.

#### **A) Questionnaires:**

- a) The first questionnaire for learners (appendix B) and instructors (appendix D) contains 25 questions with the following sections:

Table 3.1 Description of first Survey Items

Section	Number of questions	Total Number of Survey Items or Categories
Identification Code	3	58
Demographic	11	56
Time Variables	9	75
Four point Likert-type response scale (learner variables)	1	15
Total	25	204

Identification code: are the questions in the first questionnaire that will be matched with the second one at the end of the course. Questions in this section take into account the confidentiality of the data and the anonymity of participants.

Variables for demographic data: Questions to get demographic data from participants, variables of age, gender, major, delivery mode, work environment, marital status and e-learning experience, were explored.

Questions about time: questions about the patterns of use of ICT prior the course.

A four point Likert-type response scale (learner variables):

Table 3.2. Description of the Learner Variables Scale

Variable	Total Number of Items
General self-efficacy	3
Online self-efficacy	3
Motivation	3

Prior knowledge	3
Course expectation	3
Total Items for Learner Variables	15

The scale is organized in the following way. The learner variables Likert-type scale contains five predictor learners' variables with 4 optional answers being: 1 strongly disagree, 2 disagree, 3 agree and 4 strongly agree.

The first Online Questionnaire for learners is in Appendix B, and the first Online Questionnaire for instructors is in Appendix D.

- b) The second questionnaire for learners (appendix G) and instructors (appendix I) contains 12 questions with the following sections:

Table 3.3 Description of Second Survey Items

Section	Number of questions	Total Number of Survey Items or Categories
Identification Code	3	58
Demographic	2	3
Four point Likert-type response scale (institutional and outcome variables)	1	39
Time Variables	1	12
Open questions	5	6
Total	12	118

Identification code: Are the answered questions that match questionnaire with the ones answered at the beginning of the course. Questions in this section take in account the confidentiality of the data and the anonymity of participants.

Variables for demographic data: Questions to get demographic data from participants (i.e. gender, age, etc.)

Time variables: questions about the patterns of use of ICT during the tasks across the course.

A four point Likert-type response scale (institutional and outcome variables).

Finally, five open questions were added with the aim of finding subjects that learners and instructors considered important to ensure success in an online course based on their experience in the course they had done and by asking request for volunteers for an interview using Skype.

The scale is organized in the following way: one Likert-type scale includes 39 items distributed as follows: 27 Items distributed in 8 Institutional factors and 12 items distributed in 3 Outcome factors

Table 3.4 Description of the Institutional Variables Scale

<u>Variable</u>	<u>Total Number of Scale Items or Categories</u>
Learning Support	3
Social presence	3
Course Design	3
Instruction	3
Learning Platform	3

Instructor Interaction	3
Learner Interaction	3
Learning Content	3
Total Items for Institutional Variables	24

Table 3.5 Description of the Outcome Variables Scale

Variable	Total Number of Survey Items or Categories
Learner Satisfaction	5
Knowledge Acquisition	5
Knowledge Transfer	5
Total Items for Outcome Variables	15

The second Online Questionnaire for learners is in Appendix G, and the second Online Questionnaire for instructors is in Appendix I.

### 3.6 PROCEDURE AND TIMELINE

The data retrieval was conducted from February to June 2012 in a sample of 229 learners and 50 instructors. The researcher contacted online learners and course instructors through the director for undergraduate online programs. All questionnaires were posted on a host web specially designed for survey research. The average response time was about 15 minutes per questionnaire.

Questionnaires were sent in two moments during the course:

- a) The first data retrieval was 15 days after the beginning of the course, with the objective of knowing the demographic profile of learners and instructors and to know the learner's factors. As discussed in the theoretical section, learners bring to the course different experiences, knowledge, expectations and motivation. An email was sent in 15 days after the start of the course to all instructors and learners with the information sheet containing detailed information regarding the purpose or the study. Voluntary participation in the study, the confidentiality of the data collected and the link to the survey, consent to participate in the study was assumed by the completed answer of the survey.
- b) The second data retrieval was 15 days before finishing the course with the objective of finding perception of learning experience from learners and instructors. A second email was sent 15 days before completion of the course with an information sheet about the study, a link for the second survey, and contact details of the research for answering any question or addressing any concerns that participants had about the study. At the end of the survey we called for an interview using Skype and five learners and five instructors agreed.

### **3.7 DATA ANALYSIS**

With the abovementioned variables and using SPSS version 19.0, the following statistical analyses were performed:

- a) A descriptive analysis of the sample was carried out: percentage of men and women, age ranges, courses online experience, experience in social networks, etc. (see Table 4.1 and Table 4.2 in the next chapter).
- b) An analysis of comparison of means was done to verify the existence of significant differences between universities. We ran an ANOVA with unequal group of sizes. A *post hoc* test was done and therefore selected the Games-Howell *post hoc* test for three or more independent groups (Keppel & Wickens, 2004). This test is used with unequal variances and also takes into account unequal group sizes,

according to Field (2013), Games-Howell procedure generally offer the best performance.

Probability of  $p < .05$  was used as a level of significance in all analysis of the exact results of t tests.

c) In order to know internal consistency of instruments, a reliability analysis was conducted (see Table 4.3 in the next chapter). Both, correlations and homogeneity indexes were calculated for items across the scale and the scale of items grouped per dimension.

d) Likewise, with the aim of analysing relations between variables, a Spearman Rho correlation analysis was carried out. The Likert-type scale used in this study has ordinal level of measurement, they have a rank order although the distances between answer alternatives cannot be equal, thus the proper perform statistics is a non-parametric test such as Spearman Rho correlation (Field, 2013; Jamieson 2004).

e) Finally, in order to find out the prediction indexes of variables with more correlation, a multiple regression analysis with step wise method was done.

This study used the following criteria to define the effect: small 0.1, medium 0.3 and large 0.5 (Field, 2013). A level of  $p > 0.05$  was considered significant for all tests.

### **3.8 ETHICAL CONSIDERATIONS**

According to the Guidelines for Ethical Practices in Research from the Open University of Catalonia (UOC), this study took into account the following ethical considerations:

- a) All participants were informed of the study, its purpose and guaranteed of confidentiality in recruitment and consent letter with a complete explanation for learners (see Appendix A) and instructors (see Appendix C) sent in the first and second questionnaire.
- b) All records, identification code and data will be held indefinitely and confidentially.

- c) An alphanumeric identifier was assigned to participants to guarantee the confidentiality and anonymity of the subjects.
- d) The research design did not involve experimental treatment of the participants, either physically or mentally.



Results are presented in the following order: Section 4.1 yields learners and instructors demographic analysis. This section also presents the descriptive analysis of survey 1 of learners and instructors (analysis of means and standard deviations) and results of Survey 2: descriptive analysis of learners and instructors; and section 4.2 describes the representativeness of the sample, descriptive of the Measures (Scales) and Reliability for learners and instructors instrument.

In section 4.3, Correlation study is presented (surveys 1 and 2); and in section 4.4, results of scales (surveys 1 and 2) predictive study are presented. In Section 4.5 is presented a discussion about learners' perceptions, section 4.6 presents a discussion about instructors' perceptions. Section 4.7 examines learner and instructor perceptions of online instruction and discusses similarities and differences between learners and instructors perceptions.

Section 4.8 presents learners time analysis. This data are part of results of the survey.

A cross-cultural comparison between learners and instructors from China, Mexico, Spain, and USA is presented in section 4.9.

## **4.1 DESCRIPTIVE ANALYSES: DEMOGRAPHICS**

The aim of this study is to know learners and university instructors regarding different topics of online education. The characteristics of the sample of learners have to be identified in order to know which of them are significant for this study.

Results will be presented in the following order: Analysis of the study sample profile, variables of age, gender, program they are enrolled, experience in the use of technology and characteristics of their academic profile. We will make an analysis of these results with the objective of identifying probable significant data.

For the study in Mexico there were 229 survey responses from learners who took online courses in the spring semester of 2012. Thirty one survey responses were

deleted for one of the following reasons: 21 learners did not answer the second survey. 10 learners did not complete the second survey in all. In consequence, 198 responses were maintained in the sample for the full study.

There were also 50 survey responses from instructors in the first survey, 10 instructors did not complete the second survey in all. Therefore, 40 responses were maintained in the sample for the full study.

For the cross-cultural comparison between learners and instructors from China, Mexico, Spain, and USA data were taken from a study conducted by Barbera and Linder-VanBerschot (2011) at the University of New Mexico (USA), the University of Peking (China) and the Open University of Catalonia. (Spain).

#### 4.1.1 Learners Demographic Profile

Table 4.1.1 shows demographic distributions for gender, age, education and experience in ICT for learners. There were more female (60.3%) respondents than male (39.7); this is according to learners in the courses at University and to other studies with online learners.

Table 4.1 Learners demographic profile

Demographic	Frequency	Percent
Gender:		
Female	120	60.3
Male	79	39.7
Age:		
under 18	1	.5
18-24	36	18.1
25-34	87	43.7
35-54	73	36.7
55+	2	1.0
Education:		
Bachelor Degree	190	95.5
Master Degree	9	4.5
Experience:		
Experience with ICT		
Beginner	28	14.1
Intermediate	99	49.7
Advanced	72	36.2

Most of the respondents were either 25-34 or 35-54 years old and a few were under 24 years old. Only 2 learners were older than 55. This age is according to the learners' profile of online learning in Mexico, which is different from traditional university students.

Most learners are taking undergraduate level courses (95%), only 4.5% of the respondents were from graduate level.

Half of the respondents (49.7) are intermediate users of ICT and 36.2% of the respondents are advanced users of ICT. Only 14.1% reported to be beginners.

#### 4.1.2 Instructors Demographic Profile

Table 4.1.2 shows demographic distributions of gender, age, education and experience with ICT for instructors. There were more male (52.5%) respondents than female (47.5%). This is according to the number of instructors teaching courses at the University.

Table 4.2 Instructors demographic profile

Demographic	Frequency	Percent
Gender:		
Female	19	47.5
Male	21	52.5
Age:		
25-34	20	50
35-54	9	22.5
55-60	11	27.5
Education:		
Bachelor Degree	10	25
Master Degree	22	55
Doctorate Degree	8	20
Experience:		
Experience with ICT		
Intermediate	19	47.5
Advanced	21	52.5

Half of the instructors were 25-34 years old, nine percent were either 35-54, and eleven percent was 55-60 years old.

More than half of the instructors (52.5%) have advanced level using ICT, 47.5% have intermediate level and no one reported to be a beginner user of ICT.

#### 4.2 REPRESENTATIVENESS OF THE SAMPLE, DESCRIPTIVES OF THE MEASURES (SCALES) AND RELIABILITY

Table 4.3.1 shows the average score and reliability information for each scale based on the sample collected during spring semester 2012.

For learners and instructors each subscale had an average score higher than the midpoint of their corresponding scale.

Table 4.3 Learners: Average Score and Reliability information for Each Scale (N=198)

	$\alpha$	$M$	$SD$	Number of items	Range
Learner Factors Institutional	0.92	3.17	0.60	15	1-4
Factors	0.94	3.14	0.57	24	1-4
Outcome Factors	0.93	3.16	0.57	15	1-4

*Note.*  $\alpha$  refers to Cronbach's alpha

Table 4.4 Instructors: Average Score and Reliability information for Each Scale (N=40)

	$\alpha$	$M$	$SD$	Number of items	Range
Learner Factors Institutional	0.745	3	0.51	15	1-4
Factors	0.906	3.24	0.58	24	1-4
Outcome Factors	0.92	3.19	0.57	15	1-4

*Note.*  $\alpha$  refers to Cronbach's alpha

The Cronbach's alpha coefficient values for three subscales were all larger than 0.7 presenting good reliability for each scale.

### **4.3 RELATIONSHIP BETWEEN LEARNER AND INSTITUTIONAL VARIABLES FROM LEARNERS' AND INSTRUCTORS' PERCEPTION**

In order to know the relationship between variables a correlation analysis was carried out

The sample size for analyses consisted of 198 learners and 40 instructors representing all learners and instructors who completed the two surveys. People who did not answer one of the surveys were not included and deleted from the survey.

#### **4.3.1 Correlation analysis from student's perception.**

All five learner predictors were significantly correlated with outcome factors. The positive relationship of each predictor with each outcome factor implied a tendency towards a higher learner satisfaction, knowledge acquisition and knowledge transfer scores when scores of each independent variable increased.

General self-efficacy ( $r = .820, p < .01$ ), online self-efficacy ( $r = .689, p < .01$ ), motivation ( $r = .560, p < .01$ ), prior knowledge ( $r = .530, p < .01$ ) and course expectation ( $r = .516, p < .01$ ) showed strongest relationship with learner satisfaction.

Motivation ( $r = .778, p = .01$ ), online self-efficacy ( $r = .637, p < .01$ ), general self-efficacy ( $r = .617, p < .01$ ) and prior knowledge ( $r = .588, p < .01$ ) showed strongest relationship with knowledge acquisition while course expectation ( $r = .473, p < .01$ ) showed a weak correlation with knowledge acquisition.

Prior knowledge ( $r = .685, p < .01$ ), course expectation ( $r = .660, p < .01$ ) and general self-efficacy ( $r = .567, p < .01$ ) showed strongest relationship with knowledge transfer while online self-efficacy ( $r = .494, p < .01$ ) and motivation ( $r = .490, p = .01$ ) showed a weak correlation with knowledge transfer.

All eight institutional predictors were significantly correlated with outcome factors. The positive relationship of each predictor with each outcome factor implied a tendency towards a higher learner satisfaction; knowledge acquisition and knowledge transfer scores when scores of each independent variable increased.

Course design ( $r = .735, p < .01$ ), learning content ( $r = .687, p < .01$ ), social presence ( $r = .567, p < .01$ ) and instruction ( $r = .539, p < .01$ ) showed strongest relationship with learner satisfaction while learner support ( $r = .471, p < .01$ ), instructor interaction ( $r = .446, p < .01$ ), learner interaction ( $r = .441, p < .01$ ) and learning platform ( $r = .376, p < .01$ ) showed a weak correlation with satisfaction.

Course design ( $r = .672, p < .01$ ), learning content ( $r = .627, p < .01$ ), instruction ( $r = .562, p < .01$ ), social presence ( $r = .534, p < .01$ ) and instructor interaction ( $r = .517, p < .01$ ) showed strongest relationship to knowledge acquisition while learner interaction ( $r = .405, p < .01$ ), learner support ( $r = .442, p < .01$ ) and learning platform ( $r = .338, p < .01$ ) showed a weak correlation with knowledge acquisition.

Course design ( $r = .595, p < .01$ ) and learning content ( $r = .535, p < .01$ ) showed strongest relationship with knowledge transfer while instruction ( $r = .461, p < .01$ ), social presence ( $r = .460, p < .01$ ), learner support ( $r = .368, p < .01$ ), learner interaction ( $r = .365, p < .01$ ) instructor interaction ( $r = .346, p < .01$ ), and learning platform ( $r = .236, p < .01$ ) showed a weak correlation with knowledge transfer.

Table 4.5 Means, standard deviations and results of the correlation analysis among learners' factors regarding learners perception.

Variables	Mean	SD	1	2	3	4	5	6	7	8
1 General self-efficacy	3.31	0.57	1							
2 Online self-efficacy	3.17	0.61	.742**	1						
3 Motivation	3.14	0.60	.636**	.680**	1					
4 Prior knowledge	2.91	0.64	.570**	.544**	.582**	1				
5 Course Expectation	3.11	0.57	.553**	.478**	.505**	.735**	1			
6 Learner Satisfaction	3.28	0.57	.820**	.689**	.560**	.530**	.516**	1		
7 Knowledge Acquisition	3.10	0.55	.617**	.637**	.778**	.588**	.473**	.753**	1	
8 Knowledge Transfer	3.09	0.58	.567**	.494**	.490**	.685**	.660**	.665**	.666**	1

Note. \* $p < .05$ ; \*\* $p < .01$ . Maximum possible score = 4,  $N = 198$

Table 4.6 Means, standard deviations and results of the correlation analysis among institutional factors from learners perception.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1 Learner support	3.19	0.47	1										
2 Social presence	3.01	0.64	.597**	1									
3 Instruction	3.08	0.64	.604**	.807**	1								
4 Learning Platform	3.06	0.46	.561**	.461**	.472**	1							
5 Instructor Interaction	2.99	0.70	.552**	.694**	.730**	.444**	1						
6 Learner Interaction	3.16	0.53	.327**	.395**	.376**	.239**	.328**	1					
7 Learning Content	3.10	0.59	.547**	.567**	.565**	.447**	.539**	.416**	1				
8 Course Design	3.10	0.55	.578**	.619**	.638**	.448**	.586**	.438**	.717**	1			
9 Learner Satisfaction	3.28	0.57	.471**	.567**	.539**	.376**	.446**	.401**	.687**	.735**	1		
10 Knowledge Acquisition	3.09	0.57	.442**	.534**	.562**	.338**	.517**	.405**	.627**	.672**	.700**	1	
11 Knowledge Transfer	3.09	0.58	.368**	.460**	.461**	.236**	.346**	.365**	.535**	.595**	.660**	.620**	1

Note. \* $p < .05$ ; \*\* $p < .01$ . Maximum possible score = 4,  $N = 198$

### 4.3.2 Correlation analysis from instructors' perception.

From instructors' point of view, all five learner predictors showed a very weak correlation with outcome factors.

From instructors' point of view, all eight institutional predictors were significantly correlated with outcome factors. The positive relationship of each predictor with each outcome factor implied a tendency towards a higher learner satisfaction, knowledge acquisition and knowledge transfer scores when scores of each independent variable increased.

Course design ( $r = .769, p < .01$ ), instruction ( $r = .727, p < .01$ ), learning content ( $r = .672, p < .01$ ) and learner interaction ( $r = .501, p < .01$ ) showed strongest relationship with learner satisfaction while instructor interaction ( $r = .390, p < .01$ ), learning platform ( $r = .379, p < .01$ ), social presence ( $r = .388, p < .01$ ) and learner support ( $r = .311, p < .01$ ) showed a weak correlation with satisfaction.

Course design ( $r = .789, p < .01$ ), instruction ( $r = .705, p < .01$ ), learning content ( $r = .667, p < .01$ ) and learning platform ( $r = .521, p < .01$ ) showed strongest relationship with knowledge acquisition, while learner interaction ( $r = .472, p < .01$ ), instructor interaction ( $r = .362, p < .01$ ), social presence ( $r = .346, p < .01$ ) and learner support ( $r = .343, p < .01$ ) showed a weak correlation with knowledge acquisition.

Social presence ( $r = .568, p < .01$ ), learning content ( $r = .559, p < .01$ ) and course design ( $r = .512, p < .01$ ) showed strongest relationship with knowledge transfer while learner interaction ( $r = .490, p < .01$ ), instruction ( $r = .480, p < .01$ ), learner support ( $r = .423, p < .01$ ), learning platform ( $r = .406, p < .01$ ) and instructor interaction ( $r = .350, p < .01$ ) showed a weak correlation with knowledge transfer.

Table 4.7 Means, standard deviations and results of the correlation analysis among learners factors from instructors perception.

Variables	Mean	SD	1	2	3	4	5	6	7	8
1 General self-efficacy	2.84	0.56	1							
2 Online self-efficacy	3.30	0.50	-0.065	1						
3 Motivation	2.88	0.62	.405**	.447**	1					
4 Prior knowledge	2.85	0.44	-0.164	.389*	0.226	1				
5 Course Expectation	2.98	0.42	.313*	0.245	.397*	0.192	1			
6 Learner Satisfaction	3.14	0.51	0.005	0.113	0.199	0.082	0.065	1		
7 Knowledge Acquisition	3.11	0.65	0.22	-0.074	0.214	-0.067	-0.038	.797**	1	
8 Knowledge Transfer	3.20	0.54	0.021	0.027	0.173	-0.05	0.035	.493**	.658**	1

Note. \* $p < .05$ ; \*\* $p < .01$ . Maximum possible score = 4,  $N = 40$

Table 4.8 Means, standard deviations and results of the correlation analysis among institutional factors from instructor's perception.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1 Learner Support	3.11	0.48	1										
2 Social presence	3.27	0.52	.452**	1									
3 Instruction	3.28	0.50	0.261	.538**	1								
4 Learning Platform	3.06	0.57	.438**	0.109	0.289	1							
5 Instructor Interaction	3.25	0.69	0.112	.671**	.466**	0.064	1						
6 Learner Interaction	3.24	0.69	.381*	.565**	.335*	0.202	.401*	1					
7 Learning Content	3.25	0.59	.412**	.343*	.583**	.525**	.352*	.396*	1				
8 Course Design	3.27	0.58	0.282	.400*	.712**	.359*	.450**	.379*	.738**	1			
9 Learner Satisfaction	3.14	0.51	0.311	.388*	.727**	.379*	.390*	.501**	.672**	.769**	1		
10 Knowledge Acquisition	3.11	0.65	.343*	.346*	.705**	.521**	.362*	.472**	.667**	.789**	.797**	1	
11 Knowledge Transfer	3.20	0.54	.423**	.568**	.480**	.406**	.350*	.490**	.559**	.512**	.493**	.658**	1

Note. \* $p < .05$ ; \*\* $p < .01$ . Maximum possible score = 4,  $N = 40$

#### 4.4 PREDICTOR OF LEARNING OUTCOMES FROM LEARNERS' AND INSTRUCTORS' PERCEPTIONS

A multiple linear regression analysis was carried out to see how the independent variables (learner and institutional factors) could predict the outcome factors: learner satisfaction, knowledge acquisitions and knowledge transfer.

In order to know that there was no extreme multicollinearity in the data, we analysed the variance inflation factors, and for all factors it was less than 3. It means that there are no redundant variables and there are no exact linear relationships between independent and dependent variables.

The five learner variables and the eight institutional variables were entered into the regression equation so as to estimate how those institutional factors were proportionally related to their correlate outcome factors.

##### 4.4.1 Results of regression from learners' perceptions.

Regression analysis was used in order to predict student satisfaction; results are presented in table 4.9.

Table 4.9 Results of Regression of Student Satisfaction

Variables	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
General self-efficacy	0.560	0.044	0.558	12.688**
Course Design	0.351	0.052	0.338	6.777**
Learning Content	0.103	0.050	0.106	2.069*

Note. \* $p < .05$ ; \*\* $p < .01$ ,  $N = 198$

On the results for students, as Table 4.9 indicates, three variables, general self-efficacy, course design and learning content, explained a significant amount of variance in student satisfaction.  $R^2 = 0.781$ , adjusted  $R^2 = 0.778$ ,  $F(1,194)=230.95$ ,  $p = .000$ .

These results suggest that 78% of the variances are explained by these variables.

Regression analysis was used in order to predict knowledge acquisition; results are presented in table 4.10.

Table 4.10 Results of Regression of Knowledge Acquisition

Variables	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
Motivation	0.437	0.045	0.476	9.676**
Course Design	0.261	0.057	0.26	4.577**
Learning Content	0.101	0.052	0.107	1.936*
Prior knowledge	0.097	0.04	0.114	2.436*
Instructor Interaction	0.082	0.037	0.104	2.21*

Note. \* $p < .05$ ; \*\* $p < .01$ ,  $N = 198$

On the results for students, as Table 4.10 shows, five variables, motivation, course design, learning content, prior knowledge and instructor interaction, explained a significant amount of variance in knowledge acquisition.  $R^2 = 0.746$ , adjusted  $R^2 = 0.74$ ,  $F(5,192)=112,9$ ,  $p = .000$ .

These results indicate that 74% of the variances are explained by these variables.

Regression analysis was used in order to predict knowledge transfer; results are presented in table 4.11.

Table 4.11 Results of Regression of Knowledge Transfer

Variables	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
Prior knowledge	0.315	0.06	0.352	5.281**
Course Design	0.405	0.056	0.386	7.271**
Course Expectation	0.282	0.067	0.28	4.237**
Learning Platform	-0.167	0.062	-0.134	-2.683*

Note. \* $p < .05$ ; \*\* $p < .01$ ,  $N = 198$

On the results for learners, as Table 4.11 indicates four variables, prior knowledge, course design, course expectation and learning platform explained a significant amount of variance in knowledge transfer.  $R^2 = 0.625$ , adjusted  $R^2 = 0.618$ ,  $F(4,193)=80.5$ ,  $p = .000$ .

These results show that 62% of the variances are explained by these variables.

#### 4.4.2 Results of regression from instructors' perceptions.

Regression analysis was used in order to predict student satisfaction; results are presented in table 4.12.

Table 4.12 Results of Regression of Student Satisfaction

Variables	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
Course Design	0.391	0.117	0.446	3.336**
Instruction	0.341	0.133	0.336	2.557*
Learner Interaction	0.161	0.073	0.219	2.197*

Note. \* $p < .05$ ; \*\* $p < .01$ ,  $N = 40$

On the results for teachers, as Table 4.12 indicates, three variables, course design, instruction and learner interaction, explained a significant amount of variance in student satisfaction.  $R^2 = 0.697$ , Adjusted  $R^2 = 0.672$ ,  $F(3, 36) = 27.6$ ,  $p = .000$ .

These results suggest that 69% of the variances are explained by these variables.

Regression analysis was used in order to predict knowledge acquisition; results are presented in table 4.13.

Table 4.13 Results of Regression of Knowledge Acquisition

Variables	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
Course Design	0.566	0.144	0.502	3.918**
Learning Platform	0.297	0.106	0.262	2.791**
Instruction	0.353	0.163	0.271	2.169*

Note. \* $p < .05$ ; \*\* $p < .01$ ,  $N = 40$

On the results for teachers, as Table 4.13 indicates, three variables, course design, learning platform and instruction explained a significant amount of variance in knowledge acquisition  $R^2 = 0.724$ , Adjusted  $R^2 = 0.701$ ,  $F(3,36)=31.4$ ,  $p = .000$ .

These results show that 72% of the variances are explained by these variables.

Regression analysis was used in order to predict knowledge transfer; results are presented in table 4.14.

Table 4.14 Results of Regression of Knowledge Transfer

Variables	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
Social presence	0.446	0.133	0.426	3.354**
Learning Content	0.377	0.116	0.413	3.246**

Note. \* $p < .05$ ; \*\* $p < .01$ ,  $N = 40$

On the results for teachers, as Table 4.14 indicates, two variables, social presence and learning content explained a significant amount of variance in knowledge transfer  $R^2 = 0.472$ , Adjusted  $R^2 = 0.444$ ,  $F(2, 37) = 16.5$ ,  $p = .000$ .

These results show that 47% of the variances are explained by these variables.

## 4.5 DISCUSSION ABOUT LEARNERS' PERCEPTIONS

This section provides a summary of findings and discussions for research questions posed at the beginning of this study in terms of the data analysis.

The first part presents findings and discussions from learners' perceptions. The second part moves on to describe the findings and discussions from instructors' perceptions.

### 4.5.1 Research Question One

The correlation analysis was used to answer the first research question:

To what extent is each predictor variable (learner factors and institutional factors) correlated with each outcome variable (learner satisfaction, knowledge acquisition, knowledge transfer)?

Significant correlation was found between two outcomes (student satisfaction and knowledge acquisition) and general self-efficacy and online self-efficacy, the present findings seem to be consistent with other research (Lim & Morris 2009), which found significant relationship between self-efficacy and learning outcomes.

Bandura's (1997) suggest that self-efficacy have a relationship with learners' background, in the context of this research findings could be because students reported highly confident with their technical efficacy

However, the findings of the current study do not support the previous research of Puzziferro (2008) who found poor correlation between technology self-efficacy and the final grade and satisfaction in online courses.

Significant correlation was found between knowledge acquisition and motivation and a significant correlation was found between knowledge transfer and prior knowledge and course expectation. The findings of the current study are consistent with those of Arbaugh (2004) who found higher levels of learning performance in students with more previous experiences in taking online courses.

Correlation analyses showed a strong relationship between learning satisfaction, course design and learning content. The correlation also demonstrated a relationship between these two factors and knowledge acquisition and slightly stronger relationship between knowledge transfer and course design.

The most striking result to emerge from the data is that stressed the importance on decisions made about the design of online courses. More qualitative research is needed in order to know the nature of the design that leads a better acquisition and transferability of knowledge.

#### **4.5.2 Research Question Two**

Research question two refers to what extent do the combination of learner's factors and institutional factors predict student satisfaction, knowledge acquisition, and knowledge transfer?

One of the five learner factors examined was found to affect student satisfaction: general self-efficacy. And two of the institutional factors were found to be important: course design and learning content. This is in accordance with the previous research (Eom, Wen & Ashill, 2006; Lapointe & Gunawardena 2004, Law et al., 2010, Wu et al, 2010) that found self-efficacy as a good predictor for satisfaction and performance of the learners.

Of the five learner factors, only two, motivation and prior knowledge were supported and three of the eight institutional factors examined were found to be important in contributing to knowledge acquisition: course design, learning content and instructor interaction. Eom, Wen and Ashill (2006) found relationship between course structure and perceived of learning and Barbera and Linder-VanBerschoot (2011) and Law et al (2010) found motivation was an important factor for learner satisfaction.

Of the five learner factors, prior knowledge and course expectation were found to make a statistically significant contribution to knowledge transfer. Of the eight institutional factors, course design significantly contributes to knowledge transfer, in accordance to literature (Gunawardena, Linder-VanBerschoot, LaPointe & Rao, 2010). Course design was found to be as an important factor impacting student satisfaction, knowledge acquisition and knowledge transfer.

### **4.5.3 Research Question Three**

Research question three is which of the variables remain significant when all are used to predict learner satisfaction, knowledge acquisition and knowledge transfer?

According of the data analysis there are three primary factors that remain significant when are used to predict outcomes. These findings suggest that learners believe to be the most important in establishing an effective online classroom:

- Course design
- Learning content
- Prior knowledge

These factors demonstrated the highest correlations as well as the highest levels of influence (Beta coefficient) in all three-outcome factors.

Also, this research did not find significant relationship between learner support, social presence, instruction learning platform and learner interaction, which is consistent with findings by other researchers (Gunawardena & Zittle, 1997,

Richardson & Swan, 2003) who have not found a relationship between social presence and satisfaction.

## **4.6 DISCUSSION ABOUT INSTRUCTORS' PERCEPTIONS**

The section describes the findings and discussions from instructors' perceptions.

### **4.6.1 Research Question One**

The correlation analysis was used to answer the first research question related to instructors' perceptions:

To what extent is each predictor variable (learner factors and institutional factors) correlated with each outcome variable (learner satisfaction, knowledge acquisition, knowledge transfer)?

From instructor's perception, answering the correlation between each predictor variable with each outcome variable, no significant correlation was found between outcome factors and learner factors

Correlation analyses showed a strong relationship between learner satisfaction and course design, instruction, learning content and learner interaction.

The correlation also demonstrated relationship between course design, instruction, learning content, learning platform and knowledge acquisition

### **4.6.2 Research Question Two**

The regression analysis was used to answer the second research question related to instructors' perceptions:

To what extent do the combination of learner's factors and institutional factors predict student satisfaction, knowledge acquisition, and knowledge transfer?

Three institutional factors, social presence, learning content and course design, showed stronger relationship with knowledge transfer.

This echoes Swan and colleagues (2008), who developed an instrument to measure the relationship between social presence and learning outcomes at four universities. Their study demonstrated that social presence was a predictor of learner satisfaction (Swan, Richardson, Ice, Garrison, Cleveland-Innes, & Arbaugh, 2008).

Three of the examined eight institutional factors were found to predict student satisfaction: course design, instruction and learner interaction. This finding corresponds with the results of Eom and colleagues (2006), who found direct instruction and feedback as an important predictor of learning outcomes. The later also echoes Arbaugh and Benbunan-Fich (2007) and Flottemesch (2000), who indicated that interaction among learners is one of the strongest predictors of perceived learning and learner satisfaction in online learning.

Social presence and learning content were found to be important in contributing to knowledge acquisition. This finding echoes Holton, Bates and Rouna (2000), research which suggested that **knowledge transfer should be considered throughout the entire instructional design process**. The findings of the current study are consistent with those of Kang, Park, and Choi (2006) who found that IT ability of prior knowledge and cohesiveness of social presence predict achievement and satisfaction significantly.

#### **4.6.3 Research Question Three**

Research question three is which of the variables remain significant when all are used to predict learner satisfaction, knowledge acquisition and knowledge transfer?

These findings indicate that there are six primary factors that instructors believe to be the most important in establishing an effective online classroom:

- Course design
- Instruction
- Learning platform
- Learning interaction
- Learning content

- Social presence

These six factors demonstrated the highest correlations as well as the highest levels of influence (Beta coefficient) in all three-outcome factors.

The resultant correlations from students and instructors made separately leads to the importance to present the differences found between students and instructors perceptions.

#### 4.7 COMPARISON BETWEEN STUDENTS AND TEACHERS PERCEPTIONS

This section examines learner and instructor perceptions of online instruction. The results of the present study indicate some similarities and differences between learners' and instructors' perceptions,

In order to compare perceptions of learners and instructors about the learner, institutional and outcome factors, data were analysed calculating means and standard deviations.

Table 4.15 shows the average score for each scale and mean difference between learners and instructors. We ran a one-way ANOVA to compare the perceptions of learners and instructors.

Table 4.15 Results by Learners and Instructors: Mean and Significance Level

	Variables	Learners		Instructors		Sig
		Mean	SD	Mean	SD	
Learner Factors	General self-efficacy	3.31	0.57	2.84	0.56	.000
	Online self-efficacy	3.20	0.61	3.30	0.50	.175
	Motivation	3.14	0.60	2.88	0.62	.031
	Prior knowledge	2.90	0.64	2.85	0.44	.767
	Course expectation	3.10	0.57	2.98	0.42	.180
Institutional Factors	Learner support	3.19	0.47	3.11	0.48	.373
	Social presence	3.01	0.64	3.27	0.52	.017
	Instruction	3.08	0.64	3.28	0.50	.055
	Learning platform	3.06	0.46	3.06	0.57	.867
	Instructor Interaction	2.99	0.70	3.25	0.69	.033
	Learner interaction	3.16	0.53	3.24	0.69	.440
	Learning content	3.10	0.59	3.25	0.59	.131
Course design	3.10	0.55	3.27	0.58	.080	
Outcome Factors	Learner satisfaction	3.30	0.57	3.14	0.51	.140
	Knowledge acquisition	3.10	0.57	3.11	0.65	.813
	Knowledge transfer	3.10	0.58	3.20	0.54	.282

Note. Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree,  $N = 40$ , the mean difference is significant at the .05 level.

#### **4.7.1 Comparison in Learner Factors**

Learners tended to agree more with the statements than instructors.

Significant differences are observed in two of the five factors: general self-efficacy and motivation.

##### ***General self-efficacy.***

Learners tended to agree more with the statements, which means they feel better about their courses, their instructors and themselves, and are more highly motivated for learning. In analysis of interpretative factors, the difference in this factor derived from difference of the tree items (all items are presented in Appendix B). There was a difference between learners and instructors regarding perception of learners about preservation in the accomplishment of their goals. ( $p = .000$ ), regarding the confidence that learners can effectively deal with any unexpected events (personal or academic) during the semester ( $p = .003$ ) and regarding time management for the course ( $p = .000$ ).

##### ***Motivation***

The difference in this factor derived mainly from the perception on the subject of relevancy of the course to their goals ( $p = .000$ ). There was also a difference between perception of learners and instructors regarding student motivation for the course ( $p = .033$ ) and regarding additional motivation needed from students to complete their work ( $p = .015$ ).

#### **4.7.2 Comparison in Institutional Factors**

Instructors tended to agree more with the statements than learners.

Significant differences are observed in three of the eight factors: social presence, instruction, and instructor interaction.

##### ***Social presence***

From instructors' perception, we got that they demonstrated concern for learners' needs ( $p = .024$ ) and also instructors agreed that they actively encouraged learners to participate in the course. ( $p = .004$ ).

### ***Instruction***

The difference in this factor derived from the difference between learners and instructors perception about effective use of teaching strategies ( $p = .052$ ). Instructors agreed more with the statement ( $M = 3.2$ ) than learners ( $M = 2.9$ ).

### ***Instructor interaction***

The difference in this factor derived from instructors and learners perception in returning all assignments with useful feedback from the instructor. ( $p = .052$ ), and from the difference in providing individualized guidance to meet the learners' needs ( $p = .047$ ).

### **4.7.3 Comparison in Outcome Factors**

Learners tended to agree more with the statements of satisfaction than instructors. However, instructors tended to agree more with statements of knowledge acquisition and knowledge transfer.

No significant differences are observed in the three outcome factors, from the 15 items of these factors, only three (one of each) were different but not actually significant.

This study found that there are similarities in two factors between learners' and instructors' perceptions: course design and learning content.

## **4.8 TIME VARIABLES**

This section presents the results in order to know how learners spend their time online and the relation with outcome factors.

Table 4.16 How many hours a day are students connected to the Internet.

	Frequency	Percent	Cumulative Percent
<b>0-2 hours</b>	24	12.1	12.1
<b>3-5 hours</b>	28	14.1	26.1
<b>6-8 hours</b>	65	32.7	58.8
<b>9-12 hours</b>	44	22.1	80.9
<b>more than 12 hours</b>	37	19.1	100.0
<b>Total</b>	198	100	

Table 4.17 How many hours a day are students connected to social networks  
(Facebook, Twitter, etc)?

	Frequency	Percent	Cumulative Percent
<b>0-2 hours</b>	48	24.1	24.1
<b>3-5 hours</b>	47	23.6	47.7
<b>6-8 hours</b>	35	17.6	65.3
<b>9-12 hours</b>	36	18.1	83.4
<b>more than 12 hours</b>	32	16.6	100.0
<b>Total</b>	198	100.0	

Table 4.18 How many hours a week do you devote to this course?

	Frequency	Percent	Cumulative Percent
<b>0-2 hours</b>	13	6.5	6.5
<b>3-5 hours</b>	43	21.6	28.1
<b>6-8 hours</b>	42	21.1	49.2
<b>9-12 hours</b>	58	29.1	78.4
<b>more than 12 hours</b>	42	21.6	100.0
<b>Total</b>	198	100.0	

Table 4.19 How many years have you been a user of internet?

	Frequency	Percent	Cumulative Percent
<b>1</b>	19	9.5	9.8
<b>2</b>	18	9.0	19.1
<b>3</b>	26	13.1	32.5
<b>4</b>	20	10.1	42.8
<b>5</b>	22	11.1	54.1
<b>6</b>	14	7.0	61.3
<b>7</b>	10	5.0	66.5
<b>8</b>	26	13.1	79.9
<b>9</b>	22	11.1	91.2
<b>more than 10</b>	17	8.5	100.0
<b>Total</b>	194	97.5	
<b>Missing</b>	4	2.5	
	198	100.0	

Table 4.20 What time of the day do you generally use for doing the course tasks?

	Frequency	Percent	Cumulative Percent
<b>Morning</b>	30	15.1	15.1
<b>Midday</b>	45	22.6	37.7
<b>Evenings</b>	50	25.1	62.8
<b>Nights</b>	37	18.6	81.4
<b>Indifferent</b>	36	18.6	100.0
<b>Total</b>	198	100.0	

Table 4.21 Time and grades, quality and leisure.

	<i>M</i>	<i>SD</i>
The grades I get are directly related to the time I devote to study	2.84	1.182
I use quality time to do the tasks of this course	2.77	1.178
I enjoy the time I devote to the course	2.73	1.192
Leisure time in front of the computer has a positive influence en my academic performance in this course	2.71	1.196
I think I can devote enough time to the course	2.83	1.162

Most students spent 6-8 hours (32,7%) or 9-12 (22,1%) hours online a day connected to the Internet and 19,1 % spent more than 12 hours connected, only 14.1% of the students spent 3-5 hours or 0-2 hours (12,1%).

It is important to show that more than 40% of students spent more than 9 hours connected a day, and 35 % spent more than 9 hours connected to social networks; also 50% devoted more than 9 hours per week to the course 50%, the mean of the use of Internet by students is 5,43 years and more than a half (62%) use workday for doing the online courses.

Most of the students think that the time they devote to the study has correlation between the grades they get, and they think they can devote enough and quality time to the course.

### 4.8.1 Results

A one-way ANOVA was carried out to find out the effect of time variables on the outcome variables.

As table 4.22 shows the number of hours online by day was significantly associated with transfer of knowledge. Learners who spent more than 12 hours a day on Internet ( $M = 3.04$ ,  $SD = 0.58$ ) had a significantly higher level of transfer of knowledge, than those who spent between 3 and 5 hours a day ( $M = 2.6$ ,  $SD = 0.4$ ),  $F(4,189) = 2.09$ ,  $p < 0.05$ .

Table 4.22 One-Way ANOVA of Hours Spent on Internet by day on Outcome Variables

	Variables										F(4, 189)
	0-2 hours		3-5 hours		6-8 hours		9-12 hours		more than 12 hours		
	M	SD	M	SD	M	SD	M	SD	M	SD	
Knowledge acquisition	2.927	.5470	3.007	.4420	2.862	.5722	2.824	.4716	2.709	.5452	1.382
Knowledge transfer	2.791	.5537	2.667	.4076	2.846	.5336	2.878	.4896	3.040	.5817	2.09**
Learner satisfaction	2.809	.5327	2.926	.5439	2.708	.5281	2.898	.5237	2.817	.5828	1.164

Note. The maximum score is 4

\* $p < .05$ .

\*\* $p < .01$

As indicated in table 4.23, the time in years using Internet was significantly associated with learner satisfaction. Learners who had used Internet for 5 years ( $M = 2.93$ ,  $SD = 0.55$ ) had a significantly higher level of learner satisfaction, than those who had spent one year using Internet ( $M = 2.6$ ,  $SD = 0.5$ ),  $F(9,185) = 1.93$ ,  $p < 0.05$ .

As table 4.24 shows the number of hours spent in social networks by day was significantly associated with transfer of knowledge. Learners who had spent more than 12 hours a day on social networks ( $M = 2.96$ ,  $SD = 0.58$ ) had a significantly higher level of transfer of knowledge, than those who had spent between 6 and 8 hours a day ( $M = 2.67$ ,  $SD = 0.46$ ),  $F(4,189) = 1.79$ ,  $p < 0.05$ .

The number of hours devoted to the course per week (see Table 4.25) was significantly associated with learner satisfaction. Learners who had spent less than 2 hours a week to the course ( $M = 2.96$ ,  $SD = 0.48$ ) had a significantly higher level of

satisfaction than those who had spent more than 12 hours a week ( $M = 2.67$ ,  $SD = 0.5$ ),  $F(4,189) = 1.162$ ,  $p < 0.05$ .

As table 4.26 shows, the time during the day spent on academic tasks was significantly associated with transfer of knowledge. Learners who work in their academic tasks during the morning ( $M = 2.97$ ,  $SD = 0.49$ ) had a significantly higher level of transfer of knowledge, than those who did it in indifferent times ( $M = 2.71$ ,  $SD = 0.54$ ),  $F(4,189) = 1.206$ ,  $p < 0.05$ .

Table 4.23 One-Way ANOVA of Years Using Internet on Outcome Variables

	1		2		3		4		5		6		7		8		9		more than 10		F(9, 185)
	Mean	SD	Mean	SD																	
Knowledge acquisition	2.856	.5078	2.929	.4298	2.864	.4855	2.853	.4937	2.791	.6094	2.969	.5528	3.000	.3266	2.723	.6501	3.000	.4542	2.687	.5749	.750
Knowledge Transfer	2.889	.4957	2.741	.4459	2.936	.5589	2.884	.5047	2.945	.5926	2.877	.4658	3.120	.3293	2.592	.5528	3.040	.5175	2.637	.4334	.596
Learner satisfaction	2.678	.5663	2.729	.5785	2.896	.5777	2.916	.4586	2.936	.5534	2.846	.6385	2.680	.4733	2.854	.6055	2.770	.5667	2.700	.3933	1.934*

Note. The maximum score is 4

\* $p < .05$ .      \*\* $p < .01$

Table 4.24 One-Way ANOVA of Hours Spent by Day in Social Networks (Facebook, Hi5, etc.) on Outcome Variables.

											F(4, 189)
	0-2 hours		3-5 hours		6-8 hours		9-12 hours		more than 12 hours		
	M	SD	M	SD	M	SD	M	SD	M	SD	
Knowledge acquisition	2.922	.5274	2.813	.6217	2.806	.5420	2.842	.5093	2.875	.3959	.337
Knowledge Transfer	2.804	.5680	2.917	.4122	2.673	.4632	2.921	.5808	2.969	.5839	1.791*
Learner satisfaction	2.778	.5116	2.800	.5317	2.945	.5081	2.770	.5812	2.781	.5975	.623

Note. The maximum score is 4

\* $p < .05$ .      \*\* $p < .01$

Table 4.25 One-Way ANOVA of Hours by Week devoted to the Course on Outcome Variables

	0-2 hours		3-5 hours		6-8 hours		9-12 hours		more than 12 hours		F(4, 189)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Knowledge acquisition	2.769	.5407	2.775	.6456	2.961	.4780	2.884	.4954	2.810	.4939	.838
Knowledge Transfer	3.062	.4718	2.855	.5359	2.810	.4836	2.891	.5386	2.795	.5612	.769
Learner satisfaction	2.969	.4820	2.840	.5382	2.780	.6615	2.876	.4784	2.678	.5018	1.162*

Note. The maximum score is 4

\* $p < .05$ . \*\* $p < .01$

Table 4.26 One-Way ANOVA of the time during the day learners attend their online classroom on Outcome Variables

	Morning		Midday		Evenings		Nights		Indiferent		F(4, 189)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Knowledge acquisition	2.945	.5629	2.845	.4426	2.927	.4894	2.750	.5764	2.794	.5904	.908
Knowledge transfer	2.979	.4996	2.815	.4470	2.894	.5309	2.894	.5942	2.717	.5438	1.206*
Learner satisfaction	2.848	.5944	2.855	.5620	2.722	.5610	2.811	.4874	2.856	.5118	.484

Note. The maximum score is 4

\* $p < .05$ . \*\* $p < .01$

#### **4.8.2 Discussion: Research Question Four**

In order to answer the fourth research question the effect of time variables on the outcome variables concerned the overall perception of level of transfer of knowledge and time variables were analysed.

Research question four is: Do time variables (time spent on Internet, time spent in social networks, and time of the day used for doing the course tasks) affect outcome variables (learner satisfaction, knowledge acquisition, knowledge transfer)?

A one-way ANOVA was carried out to find out the effect of time variables on the outcome variables, concerned the overall perception of level of transfer of knowledge and time variables. Results show that there is a significant association with the number of hours online per day. Learners who spent more than 12 hours a day had higher knowledge transfer than those who spent between 3 and 5 hours a day. It seems that learners spent a large amount of time because they had access in their workplace or by smart phones. These findings have a relationship with the number of hours spent in social networks by day because it was significantly associated with transfer of knowledge. Learners who spent more than 12 hours a day on social networks had a significantly higher level of transfer of knowledge, than those who spent between 6 and 8 hours a day.

Learners who had a full time work could spend the whole day online and could be also in social networks more than 12 hours a day. They could also be online in smart phones after work, and they could manage their time and complete their required tasks during the morning, when they get to work. Furthermore, this study found the time spent doing academic tasks was significantly associated with transfer of knowledge. Learners who work in their academic tasks in the morning had a significantly higher level of transfer of knowledge, than those for who is indifferent. Petrova and Sinclair (2005) and Spennemann (2007) echo this view when they examined the student utilization of computer infrastructure and they found that they prefer to work in diurnal hours and almost none prefer to work in the evenings.

It seems that learners with a full time work spent more than 12 hours a day online. They are connected to social networks for a long period of time and normally

completed their academic task in the morning. They had skills in applying knowledge in different context like the workplace or in other courses.

This findings support Lim and Morris's (2009) study, which reported that transfer of knowledge had a higher influence of prior experiences with distance learning opportunities, preference in delivery, and average study time.

Learning satisfaction was significantly associated with the time in years using Internet by learners. Learners who had used Internet for 5 years had a significantly higher level of learner satisfaction, than those who had spent one year using Internet.

Learner satisfaction was also significantly associated with the number of hours devoted to the course per week. Learners who spent less than 2 hours a week to the course had a significantly higher level of satisfaction than those who spent more than 12 hours a week. This echoes Zhu's (2012) findings that the average time learners devoted per week were found to be enhancing students learning achievement.

This result suggested that learners with more experience using Internet are more confident to use the platform and complete the tasks. They have enough skills for finishing activities in a short period of time and using the course as a useful learning experience.

## **4.9 CROSS-CULTURAL COMPARISON BETWEEN STUDENTS AND TEACHERS FROM CHINA, MEXICO, SPAIN, AND USA.**

For the cross-cultural comparison data were taken from four universities, three of them were part of a previous research linked to this one conducted by Barbera and Linder-VanBerschoot (2011) at the University of New Mexico (USA), the University of Peking (China) and the Open University of Catalonia. (Spain) and the University of the present study.

Results are presented from the perspective of learners and instructors in four sections. Section 4.9.1 presents a comparison between five learner factors, section 4.9.2 presents a comparison between eight institutional factors, and section 4.9.3 presents a comparison between three outcome factors. Finally section 4.9.4 presents a discussion about the cultural differences in the four countries.

### **4.9.1 Learner factors**

Table 4.27 shows that UNM students had the highest composite scores in all five learner factors, whereas UOC students score high in two factors, (online self-efficacy, motivation), UPEP students score high in four factors (general self-efficacy, motivation, online self-efficacy, course expectation) and PKU students score significantly high in one factor (online self-efficacy).

All five learner factors differed significantly according to the university of the students.

Table 4.27 shows that general self-efficacy; online self-efficacy and motivation were the top three most important factors that impact e-learning success in the four countries. On the other hand, prior knowledge and course expectation had the lowest mean scores.

General self-efficacy was the most important factor for UPAEP ( $M = 3.31$ ) learner's perspective; UNM's also agreed with this factor ( $M = 3.25$ ), the most important difference was in PKU students and the other three universities. ( $p = .000$ ).

There are differences in online self-efficacy between PKU and UNM students ( $p = .010$ ); and PKU and UNM ( $p = .019$ ). There were no significant differences between PKU and UPAEP students ( $p = .992$ ).

There were significant differences between UOC and PKU and UPAEP students perceptions, ( $p = .000$ ) in motivation. There was an absence of differences between respondents of UOC and UNM.

Prior knowledge had the lowest score from the perspective of three universities, UOC ( $M = 2.74$ ), PKU ( $M = 2.81$ ) and UPAEP ( $M = 2.90$ ).

Course expectation was important for UPAEP ( $M = 3.10$ ) and UNM ( $M = 3.02$ ) learners.

Table 4.27 Mean and standard deviation for each learner factor from learner perspective: comparative results by country.

Learner Factors	UOC N= 687		UNM N= 57		PKU N= 177		UPAEP N= 198		Significance level
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Sig
General Self-efficacy	3.01	0.46	3.25	0.57	3.03	0.67	3.31	0.57	.000
Online self-efficacy	3.24	0.5	3.33	0.6	3.23	0.63	3.2	0.61	.000
Motivation	3.28	0.64	3.46	0.66	2.97	0.96	3.14	0.6	.000
Prior knowledge	2.74	0.51	3.06	0.51	2.81	0.71	2.9	0.64	.000
Course expectation	2.79	0.57	3.02	0.64	2.82	0.87	3.1	0.57	.000

*Note.* Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree, the mean difference is significant at the .05 level.

Instructors' opinion, according to the high global results for these factors (see Table 4.28), is that online students are adequately prepared. Overall, the factors which students bring to the online learning experience are, in descending order: online self-efficacy, motivation, prior knowledge, general self-efficacy and course expectations.

There are no significant differences between what instructors at UOC, UNM, PKU and UPAEP reported in three factors: learners' course expectations and online and general self-efficacy. This last factor showed almost the lowest score reported by the four universities. But significantly, even though general self-efficacy is the lowest factor in the four settings, UOC, UNM, PKU and UPAEP instructors believed

predominantly that learners had online self-efficacy and this factor is the one which receives the highest homogeneously score from the three universities.

After online self-efficacy, the highest scores for each university are the following: UOC instructors reported that students were highly motivated to learn in the course whereas the PKU instructors reported that learners had more than enough prior knowledge needed to succeed in the course. Finally UNM and UPAEP instructors reported that two learner factors have the same importance for learners: motivation and course expectation.

Overall results for this section of learner factors are consistent by countries in the sense that the total of PKU instructors tended to score higher with the statements related to all learner factors than their peers from UNM, UOC and UPAEP.

In general terms, differences (but not significant) are observed in two of the five learner factors –motivation and prior knowledge– between instructors from the four universities, as we explain below:

### ***Motivation***

PKU scores higher than UOC and at the same time this university scores higher than UNM and UPAEP in instructors' perspective of the learners' perceived motivation in online courses. Analysing the content of the items responsible for this difference we found the divergence in this factor derived from statistical discrepancies between UNM, UPAEP and UOC ( $p = .001$ ), but also UNM and PKU ( $p = .004$ ) regarding the fact that they tended to “need (extra) motivation to complete their work”. On the other hand, all teachers from UNM, UOC, PKU and UPAEP agreed that the course was relevant to learners' goals and that students are usually motivated to learn in those courses.

### ***Prior Knowledge***

Again UPK scores higher than UPAEP, UOC and UNM (in order) in this factor, which demonstrates the instructors' insight in terms of whether learners are sufficiently prepared to start courses successfully. The difference in this factor derives from difference between the UPAEP, UOC and UNM ( $p = .002$ ) and UOC and PKU ( $p = .002$ ) regarding the perception of the sufficient “level of background knowledge learners had to succeed in the course”. Instructors from UNM, UOC,

PKU and UPAEP agreed that learners should be able to apply information they have learned in other courses to this course although they may be weak in some areas of the course.

Table 4.28 Mean and standard deviation for each learner factor from Instructor perspective: comparative results by country.

	UOC		UNM		PKU		UPAEP		Significance level
	N= 106		N= 16		N= 7		N= 40		
Learner Factors	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Sig
General Self- efficacy	2.74	0.75	2.65	1.08	2.83	0.84	2.84	0.56	.953
Online self-efficacy	3.24	0.57	3.31	0.79	3.19	0.87	3.30	0.50	.908
Motivation	2.95	0.83	2.71	0.99	3.07	0.51	2.88	0.62	.163
Prior knowledge	2.82	0.75	2.69	1.04	3.16	0.4	2.85	0.44	.304
Course expectation	2.74	0.86	2.71	0.92	2.84	0.88	2.98	0.42	.654

*Note.* Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree, the mean difference is significant at the .05 level.

#### 4.9.2 Institutional factors

Table 4.29 shows that UNM students had the highest composite scores in all eight institutional factors, whereas UOC students score high in two factors, (learner support, learner interaction), UPEP students score high in two factors (learning support, learning interaction), PKU students score high in two factors (social presence, learner interaction)

Seven institutional factors differed significantly according to the university of the respondents.

Learner support was the factor that had the highest score from the perspective of three universities UNM ( $M = 3.58$ ), UOC ( $M = 3.21$ ) and UPAEP ( $M = 3.19$ ).

Learners at UNM agreed more with social presence, and it was the university with the highest score ( $M = 3.55$ ). Likewise, learners from UOC ( $M = 3.05$ ), PKU ( $M = 3.16$ ) and UPAEP ( $M = 3.01$ ) reported similar perspectives.

UNM learners reported a high score in instruction factor ( $M = 3.59$ ). There was a high difference between universities. UOC ( $M = 3.09$ ) and UPAEP ( $M = 3.08$ ) had similar scores, and PKU learners reported the lowest score ( $M = 2.92$ ).

Similar differences were reported in learning content and course design factors.

Learners from UPAEP and UNM agreed more with general self-efficacy. This could have a relation with Hofstede's dimension of masculinity and individualism

Learners from UNM and UOC agreed more with online self-efficacy; this is consistent with Kumar (2010), who found that individualism has a moderating role on the effect of the self-efficacy abilities. United States has a high index of individualism (91) comparing with Spain (51), México (30) and China (20).

Learners from UOC and UNM reported being motivated to learn in the course whereas PKU and UPAEP reported lower scores. This result may lead us to assume that individualistic societies are motivated by individually based needs and rewards (Hofstede 2001).

UPAEP students reported course expectation as a very important factor. In Mexican society with high PDI score students have high expectations in institution and instructors. They are "gurus who transfer personal wisdom" (Hofstede 2001 p 107).

UNM students agreed more with learner support factor; they agreed that they had enough access to resources and adequate training on the platform in order to be independent using the platform. These findings echo Hofstede (2001) in that learners tend to be independent using the platform, activities and assignments in low uncertainty avoidance countries (United States: UAI=46).

UNM learners reported high scores in instruction factor. These findings echo Hofstede's description of low PDI societies in the School, where "the teachers are experts who transfer impersonal truths" and the relationship between teachers and students is as equals (Hofstede 2001, P. 107). United States has the lowest PDI (40) score in universities of this study.

UNM also reported high scores in learning content and course design factors. Learners believe that design of the course content has to be relevant, material of the course has to be clear and should be encouraging, this echoes the low PDI where

students are independent and the systems need to be well developed to improve the independence of students.

Table 4.29 Mean and standard deviation for each institutional factor from learner perspective: comparative results by country.

Institutional Factors	UOC N= 380		UNM N= 42		PKU N= 87		UPAEP N= 198		Sig
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Learner support	3.21	0.62	3.58	0.59	3	1	3.19	0.47	.000
Social presence	3.05	0.75	3.55	0.62	3.16	0.88	3.01	0.64	.000
Instruction	3.09	0.73	3.59	0.69	2.92	1	3.08	0.64	.000
Learning platform	3.06	0.66	3.32	0.72	3.01	0.87	3.06	0.46	.012
Instructor interaction	3.05	0.78	3.19	0.96	2.93	1	2.99	0.7	.281
Learner interaction	3.15	0.66	3.38	0.72	3.15	0.86	3.16	0.53	.016
Learning content	3.09	0.07	3.59	0.26	3.02	0.96	3.1	0.59	.000
Course design	3.09	0.14	3.52	0.71	3.02	0.95	3.1	0.55	.000

*Note.* Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree, the mean difference is significant at the .05 level.

For Instructors' perspective (see Table 4.30) overall, institutional factors score notably higher than learner factors. For online learning processes, instructors attribute more importance to social presence, learning content and instruction, while instruction interaction, learning platform and learning support occupy the bottom positions. However, all of them scored above three points.

The results are consistent as the UNM instructors tended to unanimously agree more with the statements than their UPAEP, UOC and PKU peers, while PKU instructors were the ones who tended to score lower but never scoring lower than 2.9 points.

UOC instructors reported that the major factor was instructor interaction and the minor in importance was learning platform, whereas UNM instructors reported that the major factor was instruction and the minor was instructor interaction –with

less of 0.4 points of difference between them. PKU instructors reported social presence and learning content to be the major factors and learning support the minor one. Finally, UPAEP reported instruction as a major factor and learning platform as the minor one.

All four countries score very similar in: learning platform, social presence, learning content and learner interaction. On the other hand, there were significant differences between the four countries in instruction, instructor interaction followed by learner support and course design. A more detailed explanation of the content responsible for the significant differences in the two main factors involved is provided below.

### ***Instruction***

Instructors from UNM reported instruction as the most important factor and it was the factor with the highest mean ( $M = 3.56$ ). There is also a difference between instructors from UOC ( $M = 3.36$ ), UPAEP ( $M = 3.28$ ) and instructors from PKU ( $M = 3.05$ ). The main reason for the difference was that UNM instructors reported feeling more knowledgeable in their field, the statistically significant differences in this item are due to the dissimilar scores between PKU and UOC ( $p = .003$ ) and between PKU and UNM instructors ( $p = .001$ ), PKU and UPAEP ( $p = .003$ ). Instructors from UNM, UOC, PKU and UPAEP agreed on the vision that they use effective teaching strategies and they also encouraged a variety of perspectives in online classes.

### ***Instructor Interaction***

For this factor, UOC and PKU instructors had different perceptions on responding promptly to the learners ( $p = .013$ ) and they also had differences in their perception of the individualized guidance they provided that met the learners' needs ( $p = .006$ ). Teachers from UNM, UOC, PKU and UPAEP agreed that returning all assignments with useful feedback definitely contributes to learner success, which confirms the importance of feedback in the perception of quality learning.

Table 4.30 Mean and standard deviation for each institutional factor from Instructor perspective: comparative results by country.

	UOC		UNM		PKU		UPAEP		Sig
	N= 86		N= 9		N= 18		N= 40		
Institutional Factors	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Learner support	3.17	0.58	3.33	0.78	2.93	0.61	3.1125	0.48244	.046
Social presence	3.33	0.59	3.52	0.64	3.17	0.74	3.2667	0.5186	.219
Instruction	3.36	0.51	3.56	0.49	3.05	0.77	3.2833	0.49814	.003
Learning platform	3.11	0.61	3.33	0.8	3.13	0.62	3.0583	0.57432	.448
Instructor interaction	3.47	0.63	3.11	0.96	3.02	0.64	3.2458	0.68665	.003
Learner interaction	3.31	0.65	3.44	0.76	3.11	0.73	3.2375	0.68759	.277
Learning content	3.34	0.56	3.48	0.77	3.15	0.62	3.25	0.59317	.223
Course design	3.32	0.59	3.41	0.72	3.06	0.6	3.2708	0.57696	.085

*Note.* Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree, the mean difference is significant at the .05 level.

#### 4.9.3 Outcome factors

From learners perspective two outcome factors differed significantly according to the respondents' university: knowledge acquisition and ability to transfer.

PKU learners were the only ones with low scores in learner satisfaction ( $M = 2.80$ ) and knowledge acquisition (2, 92). In both cases there were scores under 3.

UNM learners reported high scores in ability to transfer, the other three universities agreed with similar scores, UOC  $M = 3$ ; PKU  $M = 2.97$  and UPAEP  $M = 3.10$ .

Table 4.31 Mean and standard deviation for each outcome factor from learner perspective: comparative results by country.

	UOC		UNM		PKU		UPAEP		Sig
	N= 380		N= 42		N= 87		N= 198		
Outcome Factors	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Learner satisfaction	3.23	0.67	3.46	0.47	2.8	1.1	3.3	0.57	.032
Knowledge acquisition	3.11	0.68	3.42	0.7	2.92	1.03	3.1	0.57	.006
Ability to transfer	3	0.7	3.44	0.72	2.97	1.08	3.1	0.58	.000

*Note.* Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree, the mean difference is significant at the .05 level.

From the perspective of instructors from the three outcome factors of the model, there were remarkable differences in two of them: learner satisfaction (.024) and knowledge acquisition (.084).

In the knowledge transfer factor there were similarities between instructors' perceptions of the five items at all three universities, as detailed below.

Although there were no drastic differences between universities, UOC instructors tended to score higher in the statements of these factors than the ones from UPAEP, UNM and PKU (in descending order).

As learning "outcome" is a globally constructed factor, results are briefly presented for each factor with more detail below.

### ***Learner Satisfaction***

UOC instructors reported the highest mean (3.32), very similar to UNM instructors (3.27) but different from the UPAEP (3.14) and PKU ones (2.98).

The main difference between UOC and PKU results was reported in how instructors perceive students' learning from the activities assigned in the course ( $p = .02$ ). There were similarities between instructors at all four universities as regards their opinion concerning learners: they seemed to be motivated to do well in the courses, found the learning experience useful, they would recommend the online course to other learners and agree with the statement that the course is currently relevant to their needs.

### ***Knowledge Acquisition***

For this factor, the difference of perception between UOC ( $M = 3.4$ ) and PKU ( $M = 2.9$ ) instructors was reported in noticing the difference between the learners' prior knowledge and the knowledge they had gained by the end of the course ( $p = .007$ ). The analysis indicated that UOC instructors were significantly more likely to agree with the statements.

The rest of the variables remain moderately high and homogeneous among universities, particularly answers related to: correct learner performance in assignments and quizzes. Learners can explain the material covered in the courses to others, learners' awareness of their strengths and weaknesses in their learning, learners' appropriate decision-making processes and ability to solve problems using the knowledge they have gained in the analysed online courses.

### **Knowledge transfer**

Instructors at the three universities responded similarly to all questions, such as the way students use materials in new situations including personal or professional life, the proper ability to apply learning to other situations, opportunities to apply the course material in the near future and the perceived capability to broadly explore a new problem in the field studied.

Table 4.32 Mean and standard deviation for each outcome factor from instructor perspective: comparative results by country.

Outcome Factors	UOC		UNM		PKU		UPAEP		Sig
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Learner satisfaction	3.32	0.57	3.27	0.68	2.98	0.69	3.135	0.50513	.024
Knowledge acquisition	3.24	0.57	3.16	0.81	2.99	0.65	3.1138	0.64975	.084
Ability to transfer	3.26	0.6	3.16	0.75	3.09	0.66	3.1988	0.54261	.376

*Note.* Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree, the mean difference is significant at the .05 level.

Table 4.33 Mean and standard deviation for each factor from learner perspective: comparative results by country.

Learner Factors	UOC (N=687)		UNM (N=57)		PKU (N=177)		UPAEP (N=198)		Sig.
	M	SD	M	SD	M	SD	M	SD	
1. General Self- efficacy	3.01	0.46	3.25	0.57	3.03	0.67	3.31	0.57	.000
2. Online self-efficacy	3.24	0.50	3.33	0.60	3.23	0.63	3.20	0.61	.000
3. Motivation	3.28	0.64	3.46	0.66	2.97	0.96	3.14	0.60	.000
4. Prior knowledge	2.74	0.51	3.06	0.51	2.81	0.71	2.90	0.64	.000
5. Course expectation	2.79	0.57	3.02	0.64	2.82	0.87	3.10	0.57	.000
Institutional Factors	UOC (N=380)		UNM (N=42)		PKU (N=87)		UPAEP (N=198)		Sig.
	M	SD	M	SD	M	SD	M	SD	
6. Learner support	3.21	0.62	3.58	0.59	3.00	1.00	3.19	0.47	.000
7. Social presence	3.05	0.75	3.55	0.62	3.16	0.88	3.01	0.64	.000
8. Instruction	3.09	0.73	3.59	0.69	2.92	1.00	3.08	0.64	.000
9. Learning platform	3.06	0.66	3.32	0.72	3.01	0.87	3.06	0.46	.012
10. Instructor interaction	3.05	0.78	3.19	0.96	2.93	1.00	2.99	0.70	.281
11. Learner interaction	3.15	0.66	3.38	0.72	3.15	0.86	3.16	0.53	.016
12. Learning content	3.09	0.07	3.59	0.26	3.02	0.96	3.10	0.59	.000
13. Course design	3.09	0.14	3.52	0.71	3.02	0.95	3.10	0.55	.000
Outcome Factors	UOC (N=380)		UNM (N=42)		PKU (N=87)		UPAEP (N=198)		Sig.
	M	SD	M	SD	M	SD	M	SD	
14. Learner satisfaction	3.23	0.67	3.46	0.47	2.80	1.10	3.30	0.57	.032
15. Knowledge acquisition	3.11	0.68	3.42	0.70	2.92	1.03	3.10	0.57	.006
16. Ability to transfer	3.00	0.70	3.44	0.72	2.97	1.08	3.10	0.58	.000

Note. Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree,  $p < .05$

Table 4.34 Mean and standard deviation for each factor from instructor perspective: comparative results by country.

Learner Factors	UOC (N=106)		UNM (N=16)		PKU (N=7)		UPAEP (N=40)		Sig.
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
1. General Self- efficacy	2.74	0.75	2.65	1.08	2.83	0.84	2.84	0.56	.953
2. Online self-efficacy	3.24	0.57	3.31	0.79	3.19	0.87	3.30	0.50	.908
3. Motivation	2.95	0.83	2.71	0.99	3.07	0.51	2.88	0.62	.163
4. Prior knowledge	2.82	0.75	2.69	1.04	3.16	0.4	2.85	0.44	.304
5. Course expectation	2.74	0.86	2.71	0.92	2.84	0.88	2.98	0.42	.654
Institutional Factors	UOC (N=86)		UNM (N=9)		PKU (N=18)		UPAEP (N=40)		Sig.
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
6. Learner support	3.17	0.58	3.33	0.78	2.93	0.61	3.11	0.48	.046
7. Social presence	3.33	0.59	3.52	0.64	3.17	0.74	3.27	0.52	.219
8. Instruction	3.36	0.51	3.56	0.49	3.05	0.77	3.28	0.50	.003
9. Learning platform	3.11	0.61	3.33	0.8	3.13	0.62	3.06	0.57	.448
10. Instructor interaction	3.47	0.63	3.11	0.96	3.02	0.64	3.25	0.69	.003
11. Learner interaction	3.31	0.65	3.44	0.76	3.11	0.73	3.24	0.69	.277
12. Learning content	3.34	0.56	3.48	0.77	3.15	0.62	3.25	0.59	.223
13. Course design	3.32	0.59	3.41	0.72	3.06	0.6	3.27	0.58	.085
Outcome Factors	UOC (N=86)		UNM (N=9)		PKU (N=18)		UPAEP (N=40)		Sig.
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
14. Learner satisfaction	3.32	0.57	3.27	0.68	2.98	0.69	3.14	0.51	.024
15. Knowledge acquisition	3.24	0.57	3.16	0.81	2.99	0.65	3.11	0.65	.084
16. Ability to transfer	3.26	0.60	3.16	0.75	3.09	0.66	3.20	0.54	.376

Note. Scoring 1: Strongly disagree; 2: Disagree; 3: Agree, 4: Strongly agree,  $p < .05$

We now compare the results of the four countries to explore the role of culture in learners and instructors. Tables 4.3.3 and 4.3.4 are a summary of the results of both studies.

Although the universities selected are not statistically representative of the country, those represent the culture as far as they contain the common features of online learning of each place.

We selected for the analysis Hofstede's dimensions as we justified in the previous chapters.

The results of this study showed significant differences among learners in 15 of the 16 factors, while instructors had only 3 significant differences in their perception of factors, these factors are listed and discussed below.

Learners from UPAEP and UNM agree more with general self-efficacy. This construct, which describes the confidence of an individual, has relation with masculinity and individualism Hofstede's dimension.

Learners from UNM and UOC agreed more with online self-efficacy. This is consistent with Kumar (2008), who found that individualism has a moderating role on the effect of the self-efficacy abilities. United States has a high index of individualism (91) comparing with Spain (51), México (30) and china (20).

Learners from UOC and UNM reported being motivated to learn in the course, whereas PKU and UPAEP reported lower scores. This result may lead us to assume that individualistic societies are motivated by individually based needs and rewards (Hofstede, 2001).

UPAEP students reported course expectation as a very important factor. In Mexican society, with a high PDI score, learners have high expectations in institution and instructors. They are "*gurus who transfer personal wisdom*" (Hofstede, 2001, p. 107).

UNM students agreed more with learner support factor. They approved that they had enough access to resources, necessities and adequate training on the platform. This findings echo Hofstede (2001) in the fact that a low uncertainty avoidance learners tend to be independent for using the platform, activities and assignments (United States: UAI=46).

UNM learners reported high score in instruction factor. This findings echo Hofstede`s description of low PDI societies in the School, where “*the teacher are experts who transfer impersonal truths*” and the relationship between instructors and learners is as equals (Hofstede 2001, P. 107). The United States has the lowest PDI (40) score in universities of this study.

UNM also reported high scores in learning content and course design factors. Learners believe that design of the course content has to be relevant; material of the course has to be clear and should be encouraging. This echoes the low PDI, where learners are independent and the systems need to be well developed to improve the independence of learners.

PKU learners were the only ones with low scores in learner satisfaction ( $M = 2.80$ ) and knowledge acquisition (2.92). In both cases there were scores under 3.

UNM learners reported high score in ability to transfer, but the other three universities agreed with similar scores, UOC  $M = 3$ ; PKU  $M = 2.97$  and UPAEP  $M = 3.10$ .

#### **4.9.4 Discussion: Research Question Five**

In order to answer the fifth research question, the most important factors for success in online learning from the point of view of learners and instructors were analysed. Also, possible cultural causes to explain the differences and similarities among countries were studied.

Research question five is: What predictor variables are different and similar when comparing four universities from China, Mexico, Spain and USA from learners and instructors perspectives?

The results of this study revealed significant differences among learners in 15 of the 16 factors. Instructor interactions were the homogeneous factor for the four universities. In general, the highest rated learner factor was online self-efficacy, the highest rated institutional factor was learner support and the highest rated outcome factor was learner satisfaction. The lowest rated learner factor was prior knowledge, the lowest rated institutional factor was instructor interaction and the lowest rated outcome factor was ability to transfer.

Instructor interaction was one of the factors without significant differences. Mean scores for this factor are similar in UPAEP, PKU and UOC. For UNM learners, it was slightly higher.

Instructor interaction has been studied and is a factor that significantly influences learning outcomes: learner satisfaction (Artino, 2007; Eom, Wen & Ashill, 2006; Selim, 2007), knowledge acquisition (Mayer, 2005, and knowledge transfer, (Holton, 2005; Yamnill & McLean, 2001).

Researchers have pointed that uncertainty avoidance has a negatively influence in communication practices of teachers with learners. In countries with high index of uncertainty avoidance (Hofstede 2009), satisfaction with communication practice is low. According to literature, in this study UPK learners score lower in instructor interaction and UNM learners score quite high. The reason that the differences are no higher are that learners from China have more exposure to technology and their interaction with instructors and peers has been influenced by western cultures.

Another factor without difference (but not significant) was learner satisfaction, with high scores in three universities, UOC, UNM, and UPAEP, and slightly lower scores as for PKU.

According to Hofstede (2001), collectivist cultures have a strong association with customs and traditional methods. It is not easy for these societies to accept changes in education methods, and education. It is a medium for upward social mobility and making relationships in the society. Learners from China prefer face-to-face interaction with the instructor. México and China score as collectivist cultures. In contrast, in individualistic societies, learners and instructors accept changes easily and they prefer to learn using technology and normally are satisfied with online learning. The UNM and UOC scored high for both individualism and satisfaction. The findings here echo the study mentioned above.

For instructors' perceptions differences were only in 2 from 16 factors: instruction and instructor interaction. In general, for instructors, the highest rated learner factor was online self-efficacy, the highest rated institutional factor was instructor interaction and the highest rated outcome factor was learner satisfaction. The lowest rated learner factor was general self-efficacy, the lowest rated

institutional factor was learner support and the lowest rated outcome factor was knowledge acquisition.

Reading the findings transversally across factors and countries, it can be said that each group of learners and instructors from each university stresses one of the factors: while PKU instructors score higher in learner factors more than other factors, UNM instructors score higher in institutional factors; UOC instructors present higher numbers in outcome factors and UPAEP instructors score higher in institutional factors. But in this case of learners' perceptions, they are more homogenous: all four countries score higher in institutional factors.

As this fact happens homogeneously for each university, it may indicate a different online teaching approach in each country. That is: a) UPK shows a tendency to an individual approach based more on the learner because of the high weight the learner variables bring to the online learning experience, according to their instructors. b) UNM displays a trend focused on learning support that seems to point to a shared approach to teaching and learning because results imply instructional issues and a different kind of learner support. And, c) UOC shows an inclination towards results, by scoring high in outcome factors, which seems to indicate a need to demonstrate equal achievements for online and face-to-face universities –bearing in mind that UOC is a completely online university. Specific items from other factors add extra evidence on those approaches that need to be further contrasted in the future. For example, items regarding the time taken to answer student questions or the perceived level of disciplinary knowledge learners must have about the specific content involves one kind of interaction or other and configures a definite approach to online learning.

In general terms, concerning learner factors, learners' score was significantly higher than instructors: In general self-efficacy, online self-efficacy, motivation and course expectations.

The learners' score was lower than the instructors' score only concerning motivation.

Remarkably, USA, the country, which globally scores highest in learner's factor from students' point of view, shows the poorer results from the instructor's perspective. Something comparable but more moderated happens with the UPAEP.

Going into more detail in learners' factors analysis, students from UPAEP have a sense of motivation that is not shared by their instructors as the scores of the instructors for this factor is highest than the one students have. Learners' motivation for instructors is also perceived as the highest of the four countries while the score of the learners for their motivation is the lowest also of the four countries.

This similarly happens with students and instructors of the university in the USA for the same factor, but on the opposite sense: learners do not declare a high motivation for learning but instructors achieve the maximum score of the four countries.

These crossed inconsistencies reflect motivation is a controversial factor in terms of perspective of perception. This result is supported by the broadness reflected in the standard deviation on both countries. After examining the items that form the motivation factor, we can say that this discrepancy is due to difference between countries in the item: Learners tend to need additional motivation from the instructor to complete their work.

Regarding instructional factors, instructors seem to pay more attention to seven of the eight factors: social presence, instruction, learning platform, instructor interaction, learner interaction, learning content and course design, while students score higher in learner support compared to instructors.

Learner support was the factor that scores higher from the learner point of view of the four countries. Learning platform was the less important factor from the point of view of learners

USA is the country which scores higher in institutional factors from the perception of learners and instructors in all eight factors of this dimension. On the other hand, learners score higher than instructors in six factors and only two factors score higher from the point of view of instructors: learning platform and learner interaction.

The case of USA was different from the other three countries because in the majority of institutional factors, instructors score higher than learners.

Learners and instructors from China score lower than the other three countries in institutional factors.

About the outcomes, learner's factors present lower punctuation in all three factors compared to instructors. Learners attribute less importance to knowledge acquisition and ability to transfer and there is not a big difference in learner satisfaction; students score quite similar than instructors.

Learners from USA score higher in outcome factors, while learners from China score lower and students from Spain and Mexico score quite similar.

Instructors from Spain score higher and instructors from China score lower. Scores from USA and Mexico instructors' are quite similar.

Scores from instructors from Spain and China are higher while learners' scores are lower in all three outcome factors. There's the opposite situation in USA, because learners score higher than instructors in all three factors.

From Mexican learners' point of view, only satisfaction is perceived higher than instructors do. Knowledge acquisition is quite similar, and ability to transfer is perceived as more important for instructors.

This study indicated that significant factors from learners' perceptions echo Hofstede's (2001) cultural dimensional framework. However, there are some issues to take in account in this educational setting:

- Two primary factors that learners believe to be the most important in establishing an effective online classroom were online self-efficacy and learner support, the highest rated institutional factor.

- Online learners could be different from a typical learner from the same country. The exposure to technology, interactions and expectations are different.

- Instructor interaction is important for all four countries. This factor does not depend on the culture they belong to.

- There are some differences in Chinese learners and this could be caused by the globalization of the economy in China and the western influence.

It is essential to know the significant effect of culture in online learners in order to design courses that take into account the multicultural environment. Instructional designers and instructors could design activities that develop relationships between learners and learn about the cultures of their peers.

The university management has to be involved in the process of attending differences of multicultural groups and promoting academic staff activities for acquiring better intercultural awareness.

Online instructors should count on appropriate cross-cultural training in order to develop their intercultural competences.

In order to carry out an efficient communication with learners of different cultures instructors need to have a good exposure to both online and on campus courses either formally or informally.

The findings of this study show that instructors need to use different activities that permit integration and communication with learners from cultures with low and high indexes in Hofstede dimensions.

## 5.1 CONCLUSIONS

E-learning modality is more than designing a course and interaction with students in the attempt to learn through technology regardless time and space coincidence. However, it is difficult to come across with crucial factors that influence the learning experience and learners achievements, especially if the factors want to be intermingled meaningfully. In this last section we would like to highlight selected interrelated aspects result of the present research that seem key to relevant knowledge building in online settings taking into account the cultural context.

The findings suggest that course design can be mainly linked to students' satisfaction, knowledge acquisition and knowledge transfer. This echoes recent intercultural work of Jung (2012), who found that clear guidelines, well-structured course and clear development procedures for learners have influence in the perception of quality.

Even in literature, this aspect is not conclusive. Following our results, learning content had a significant effect on student satisfaction and knowledge acquisition. This is also consistent with the results from previous studies. For instance, Levine (2006) reported that content should motivate students to express their interests and interpretations. The latter indicates that the instructional designer and the online instructor should design content (not only the structure or the methodology) for stimulating the learners, this content should be relevant to the objectives of the course and must also be accessible to all learners regardless their connection capabilities. That way, logical and psychological significance of the learning content reflected in materials and interaction will be essential for learning success, in front of other more structural related factors of the teaching and learning process that we normally pay attention to the fact that they like the type of materials or digital support amongst others.

Another significant factor we found was prior knowledge, learners report that are able to apply information that they have learned in other courses and count on the prior knowledge needed for the new course which is in accordance to previous

research by Arbaugh (2008), who found prior experience of the students in online learning as a predictor of satisfaction and perceived learning.

The results of the present study indicate that students' satisfaction can be linked mainly to course design, learning content and general self-efficacy. These findings, as a group of factors, have implications for faculty and instructional designers for implementing learning strategies, in order to provide students with a quality e-learning experience.

Global access to internet allows people from different cultures to learn in multicultural settings or embedded in a specific culture. Then e-learning design has to take in account differences between the ways that people learn in order to improve and facilitate instruction, as we have seen in the cultural factors comparison above in this research. Success in learning has common cultural factors but also depends on the context. This study outlines that perception of success is important and it is rather different in different cultures.

The university board has to be involved in the management of the multicultural groups, in order to take into account cultural-based considerations. Also, subcultures will have to be identified and treated properly. The management of the university has to promote as well academic staff activities carried out in an environment of better intercultural communication.

Online instructors need to have appropriate cross-cultural training in order to develop their intercultural competences. Maybe, to acquire this needed "sense of culture" and in order to carry out good communication with learners, teachers have to be in contact, formal and informal, with other cultures, online or in campus meetings with instructors and learners from other countries. In this sense, the findings of this study show that instructors need to use different activities that permit integration and communication with learners from cultures with low and high indexes in Hofstede dimensions.

This study shows issues in countries with strong changes in new population. For example, in China new technologies are emerging and university learners are exposed to the influence of western culture. In México digital natives and the development of the infrastructure of telecommunications are influencing the exposition to multicultural society. In Spain the prior exposition to technology,

online education and the exposition to other cultures are consolidating online learning as a usual way of education.

Finally, considering the exploratory cultural approach of the application of the model, the findings lead a number of conclusions that together highlight some practical issues that instructors would consider when designing a learning course in order to be used in e-learning to really teach internationally:

***1. Design for interaction and collaboration considering intercultural audiences (learner's background).***

It is essential to know the significant effect of the culture in online learners in order to design courses that take into account the multicultural environment. Instructional designers and instructors could design activities that develop relationships between learners and learn about the cultures of their peers.

Simple questions like where the students are from, what they know from their perspective and context; if they have taken part of a cross-cultural experience; could help to focus learning experience online and come across with misunderstandings or other perspectives of the subject matter.

Findings show that teaching and learning approaches are driven culturally and these differences are stressed in learner, as it has been mentioned in the discussion section. Significant differences in learners' perceptions from the four countries were in 15 from 16 factors. These differences could be present since the perception of learning success depends on the cultural context of the learner. Cultural diverse learners could have different expectations, motivations, and ideas for communicating and receiving feedback and evaluation of their knowledge achievement. At the same time in online interaction it is not possible to use some resources for communicating, for example, body language and facial expressions. Then intercultural communication is a challenge that instructors and instructional designers have to take.

In contrast, instructors' perceptions differences were in 2 factors from 16. These differences could be because the perceptions of learning success depend on the influence of the role of professors that they already have.

University management has to be involved in how to cope with the differences of multicultural groups and promote academic staff activities that are carried out with better intercultural communication since some expressions and concepts may sound ambiguous for a member of a different culture. Cross-cultural staff also has to know that humour could be misinterpreted. Then, instructors have to be able to create an atmosphere of respect and awareness and teach learners in to manage intercultural differences, negotiate and effective communication.

Online instructors need to have appropriate cross-cultural training in order to develop their intercultural competences and effective communication with learners and know that the creation of meaning depends on cultural context and situation. So, learning and meaning are situated.

This study shows issues in countries with strong changes in new population. In China new technologies are emerging and university students are exposed to the influence of western culture. In Mexico the digital natives and the development of the infrastructure of telecommunications has influenced the exposition to multicultural society. In Spain the prior exposition to technology, online education and the exposition to other cultures are changing the ways of education.

## ***2. Design for different styles of learning, interaction and to give flexibility for using different types of interaction.***

Findings of this study show that learners from the four countries agreed in interaction as an important factor for success. For this reason, instructors need to use different activities that permit integration and fruitful communication with students from cultures with low and high indexes in Hofstede dimensions. There are some practical suggestions that instructors could use when teaching in a cross-cultural course.

At the beginning of the courses, instructors have to know who their learners are, what their attitude towards interaction is (either by culture, by group or by interest), and what and how they need to learn. With answers to these questions, instructor will be able to design interaction and collaboration activities in order to improve skills, attitudes and knowledge.

This study also found that instructor interaction was higher rated by learners and was a significant predictor of knowledge acquisition and satisfaction. This

finding echoes Eom and colleagues (2006), Kuo and colleagues (2013) and Swan (2002) that revealed greater levels of satisfaction and acquisition of knowledge in online learners with frequent interactions with the instructor. It also could be partially compared with recent disappointment and drop out from massive open online courses (Wang, 2013).

Instructors could give different options for participants' interaction in distance education with the use of discussion boards, chats, e-mail, and videoconferencing. These different kinds of online interaction will be used by learners to discuss issues, and they will choose the best option for their prior knowledge, style and cultural background. Moreover, online designers need to think outside the box to surpass current e-learning platforms to transform or to link them to new technology features and affordances.

Regarding the time of use of these kinds of online interaction, instructors have to provide flexibility for participating. According to the findings, satisfaction and knowledge transfer have significant association with the flexibility of time of the task. Learners participate during work hours and they spend an amount of time for writing their opinion before they post it in the platform.

In order to have good communication with learners, teachers should be in contact, formally and informally, with other cultures, online or in campus meetings with teachers and learners from other countries.

### ***3 Encourage transfer of learning in the context of the learner.***

Learning transfer was a factor that all learners perceived as very important and there are no significant differences in all four countries. For this reason, instructors have to show learners in what context the learning will be applied by their students, and provide opportunities for learning in context. In the current context of formal education, instructors should create a learning community where learning can be developed through meaningful interaction with students and among them and their instructor.

Instructors have to encourage the application of new knowledge in learners' context, share their point of view and develop group accountability

## 5.2 LIMITATIONS AND FUTURE RESEARCH

This research addressed some limitations that can be considered for future research. Firstly, other variables such as work status, age, and time spending on Internet or different demographic characteristics could be added.

Secondly, the study was made only with a sample of online learners and instructors. Further research could include the point of view of academic staff and managers. On the other hand, the implication of students from Social Science departments was strong. These survey responses were obtained probably because the items and terms in the surveys were well known to them, for this reason future studies could be carried out by other departments of the universities.

Third, the study data were collected by online questionnaires. Future studies should use more data sources as interviews or observation. Fourth, the sample of this study was mainly of undergraduate students, based in a university of Mexico, future works should be on a larger student sampling from various regions.

The number of countries was limited to four. Including more countries and increasing the number of universities would help determine whether the results of this study are affected by the sample size. Then, it is strongly recommended that future studies could include samples from other countries.

All learners were volunteers, so future research could generalize the findings with learners with other characteristics and look for relationships between other variables. For instance: gender, size class or course design.

The access to social networks' profile of learners was limited due to privacy matters. Future research should know the relationship between learning outcomes and variables related to social networks, for instance: number of friends, share content, likes, etc.

A further limitation is that the Hofstede work that we use to explain the cultural differences was made with a sample of employees of an international company, and that could be a subculture and not the dominant culture of the country. This weakness in the work of Hofstede was indicated by Marcus (2000) and this study was performed in universities and also could be a subculture of each country. For this

reason future research could take in account the analysis of subcultures, like gender, age, and prior exposure to other cultures.

Taking into account the prior limitations of this study and based upon the findings, the researcher recommends the following for future research:

- Useful future extension of this research could examine the change in perceptions of critical success factors over time. Learners and instructors' perceptions could be influenced with different courses and instructors throughout the degree.
- Future research should be conducted to determine the effect of other variables such as work status, age, and time spending on Internet or different demographic characteristics and outcome variables to determine the influence of these variables in learning process.
- Future research should be conducted in the success factors, in traditional and online educational environments to determinate the effects of the environment in outcome variables.
- Future research should be conducted from a sociocultural perspective. Globalization makes the social and cultural context play important roles. Learners and instructors are becoming more socially and culturally diverse.



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# Appendices

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## Appendix A Recruitment Letter for Learners (Informed Consent Form)

Participación en investigación

Estimados Alumnos:

Les invitamos a participar en este estudio de investigación que tiene como objetivo comprender la influencia de las variables que intervienen en una asignatura realizada en un entorno en línea.

Si decide participar en este estudio, se le pedirá responder dos cuestionarios —uno al comienzo del semestre y otro al final del mismo. En los cuestionarios se le solicitará información demográfica y sus percepciones sobre la experiencia de aprendizaje en línea. Rellenar cada cuestionario le llevará quince minutos, aproximadamente. No hay respuestas correctas o incorrectas. Puede decidir no contestar a una pregunta si le incomoda hacerlo. Si cree que una pregunta no le es aplicable como alumno, por favor, marque NA. Sus respuestas individuales no serán identificadas ni publicadas. Tampoco se preguntan nombres. Puede dejar de participar en este estudio en cualquier momento sin penalización. Respondiendo y rellenando estos cuestionarios en línea se indica su consentimiento de participar en este estudio. Haciendo clic abajo indica que ha leído y entendido la descripción del estudio y está de acuerdo en participar en él.

Enlace al cuestionario

<http://edu.surveymzmo.com/s3/775415/Cuestionario-inicio-de-curso-Estudiantes-UPAEP>

Muchas Gracias

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## Appendix B First Survey for Learners

**Instructions:**

**We would like to understand you as a student in the context of a subject you select. If you have more than one subject, please select the subject you would like to base your answers on for this survey. Your answers are confidential. The system creates an Identification Code by answering to the first three questions. Your Identification Code will exclusively be used to correlate both surveys you will answer in this term.**

1) What day of the month were you born?\*

- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- 09
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26

- 27
- 28
- 29
- 30
- 31

2) What is the last digit of the year you were born?\*

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 0

3) What is the last letter of your first name?\*

- A
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q

- R
- S
- T
- U
- V
- W
- X
- Y
- Z

4) Gender\*

- Male
- Female

5) Age\*

- 18 or less
- 18 - 24
- 25-34
- 35-54
- 55+

6) Name of online course you are taking:

7) Language of course:

- Spanish
- English
- Other:

8) Reason for enrolling in course (select all that apply):

- Degree/certification requirement
- Improve job performance
- Personal goal/interest
- Reference from colleague
- Suggestion from instructor
- Promotion (potential)
- Other:

9) Degree you are working towards:

- Bachelor's degree
- Master's degree
- Doctoral degree
- Other::

10) Area of study

- Architectural Design
- Art
- Health Sciences
- Applied Sciences
- Natural Sciences
- Social Sciences
- Communications
- Accounting
- Law
- Economy
- Teacher Education
- Hotel Management and Tourism
- Humanities
- Languages
- Engineering
- Music
- Business Administration
- Psychology
- IT
- Religious studies
- Other

11) The program of study on which you base your answers

12) Term of study:

- 1-3
- 4-6
- 7-9
- 10+

13) My level of competence at using common computer application (word processing, spreadsheets, databases, and presentations) is:

- Beginner
- Intermediate
- Advanced

14) How many hours a day are you connected to the internet?

- 0-2 hours
- 3-5 hours
- 6-8 hours
- 9-12 hours
- more than 12 hours

15) How many years have you been a user of internet?:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 or more

16) How many hours a day are you connected to social networks (facebook, twitter, etc.)? :

- 0-2 hours
- 3-5 hours
- 6-8 hours
- 9-12 hours
- more than 12 hours

17) How many hours a week do you devote to this course? :

- 0-2 hours
- 3-5 hours
- 6-8 hours
- 9-12 hours

more than 12 hours

18) What time of the day do you generally use for doing the course tasks?:

- Morning
- Midday
- Afternoon
- Evenings
- Nights
- Indifferent

**Logic: Show/hide trigger exists.**

19) Are you currently working?

- Yes
- No

**Logic: Dynamically shown if "Are you currently working?" = Yes**

20) If your answer to question 17 is "yes", choose one of the following options\*

- Yes, full-time (around 40 hours a week)
- Yes, part-time (less than 30 hours a week)
- Yes, only weekends.

21) Please select the number that represents your answer to each of the following questions using the scale: 1 = strongly disagree, 2= Disagree, 3= Agree y 4 = Strongly agree. Check N/A only if an item is not applicable.

	<b>strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>N/A</b>
It is easy for me to persevere so that I can achieve my goals.	<input type="checkbox"/>				
I am confident that I can effectively deal with any unexpected event (personal or	<input type="checkbox"/>				

academic) during the term.					
I know how to manage my time to do well in this course.	<input type="checkbox"/>				
I can learn from discussions in forum.	<input type="checkbox"/>				
I am capable of learning in online educational environments.	<input type="checkbox"/>				
I am confident I can use the technology to take part in this course.	<input type="checkbox"/>				
This course is relevant to my goals.	<input type="checkbox"/>				
I feel motivated to learn in this course.	<input type="checkbox"/>				
I need additional motivation from the teacher to complete the tasks.	<input type="checkbox"/>				
I am able to apply	<input type="checkbox"/>				

information I have learned in other courses to this course.					
I am weak in some areas of the course.	<input type="checkbox"/>				
I count on the prior knowledge needed for this course.	<input type="checkbox"/>				
The expectations for the amount of coursework are fair.	<input type="checkbox"/>				
I will be able to keep up with the workload.	<input type="checkbox"/>				
The course information I received before enrolling gave me an accurate picture of the course.	<input type="checkbox"/>				

22) Please select the number that represents your answer to each of the following questions using the scale: 1 = strongly disagree, 2= Disagree, 3= Agree y 4 = Strongly agree. Check N/A only if an item is not applicable.

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>N/A</b>
The grades I	<input type="checkbox"/>				

get are directly related to the time I devote to study.					
I use quality time to do the tasks of this course.	<input type="checkbox"/>				
I enjoy the time I devote to the course.	<input type="checkbox"/>				
Leisure time in front of the computer has a positive influence in my academic performance in this course.	<input type="checkbox"/>				
I think I can devote enough time to the course.	<input type="checkbox"/>				

23) Indicate how much time you spend on the Internet doing the following activities

- School-matters
- Communication with my family/relatives
- Communication with my friends
- Personal recreation
- Personal development

24) How often do you use the Internet

	<b>Once a day</b>	<b>3-5 days per week</b>	<b>1-2 days per week</b>	<b>Every other week</b>	<b>Once a month</b>	<b>Less than once a month</b>
Home	<input type="checkbox"/>					
School	<input type="checkbox"/>					
Offices	<input type="checkbox"/>					
Other people's houses	<input type="checkbox"/>					
Internet Café	<input type="checkbox"/>					
Others	<input type="checkbox"/>					

25) Please, select the number representing the use you give to the following online tools and activities using the scale: 1 = Hardly ever, 2= Occasionally, 3= frequently y 4 = Very frequently. Check NA only if an item is not applicable.

	<b>Hardly ever</b>	<b>Occasionally</b>	<b>Frequently</b>	<b>Very frequently</b>	<b>N/A</b>
E-mail	<input type="checkbox"/>				
Instant messaging (MSN, YM, etc)	<input type="checkbox"/>				
Electronic banking	<input type="checkbox"/>				
Sell goods/services	<input type="checkbox"/>				
Purchase goods/services	<input type="checkbox"/>				
Find news or	<input type="checkbox"/>				

information about current events					
Get information for school/work (research)	<input checked="" type="checkbox"/>				
Search for medical/health information	<input checked="" type="checkbox"/>				
Search for governmental services information	<input checked="" type="checkbox"/>				
Search for entertainment information	<input checked="" type="checkbox"/>				
Search for sports related information	<input checked="" type="checkbox"/>				
Search for financial information	<input checked="" type="checkbox"/>				
Search for travel information	<input checked="" type="checkbox"/>				
Employment/job-search	<input checked="" type="checkbox"/>				
Online education or training	<input checked="" type="checkbox"/>				
Online games	<input checked="" type="checkbox"/>				
Online gambling	<input checked="" type="checkbox"/>				
Participate in chat groups	<input checked="" type="checkbox"/>				

Listen and download music	<input type="checkbox"/>				
Watch videos (i.e. Youtube)	<input type="checkbox"/>				
Download e-books, presentations etc	<input type="checkbox"/>				
Listen to the radio	<input type="checkbox"/>				
Use social networks (Facebook, twitter, etc.)	<input type="checkbox"/>				
Write a personal job	<input type="checkbox"/>				
Create your own website	<input type="checkbox"/>				
Read other people website or blogs	<input type="checkbox"/>				
Contribute to websites like Wikipedia	<input type="checkbox"/>				
Share files, artwork, photos, videos with others	<input type="checkbox"/>				

---

Thank You!

Thank you for taking our survey. Your answers are relevant to this research.

---

## **Appendix C**

### **Recruitment Letter for Instructors**

Participación en investigación

Estimados Profesores:

Les invitamos a participar en este estudio de investigación que tiene como objetivo comprender la influencia de las variables que intervienen en una asignatura realizada en un entorno en línea.

Si decide participar en este estudio, se le pedirá responder dos cuestionarios —uno al comienzo del semestre y otro al final del mismo. En los cuestionarios se le solicitará información demográfica y sus percepciones sobre la experiencia de aprendizaje en línea. Rellenar cada cuestionario le llevará quince minutos, aproximadamente. No hay respuestas correctas o incorrectas. Puede decidir no contestar a una pregunta si le incomoda hacerlo. Si cree que una pregunta no le es aplicable como profesor, por favor, marque NA. Sus respuestas individuales no serán identificadas ni publicadas. Tampoco se preguntan nombres. Puede dejar de participar en este estudio en cualquier momento. Respondiendo y rellenando estos cuestionarios en línea se indica su consentimiento de participar en este estudio. Haciendo clic abajo indica que ha leído y entendido la descripción del estudio y está de acuerdo en participar en él.

Enlace al cuestionario

<http://edu.surveymizmo.com/s3/775416/Cuestionario-inicio-de-curso-Profesores-UPAEP>

Muchas Gracias

Armando Cortés

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08018 Barcelona

Office: (34) 93450-5432

Fax: (34) 93450-5432

<http://elearncenter.uoc.edu>

## Appendix D

### First Survey for Instructors

#### Instructions

**We would like to understand you as a teacher in the context of the subject you are teaching. If you have more than one online course, please select the subject you would like to base your answers on for this survey. Your answers are confidential. The system creates an Identification Code by answering to the first three questions. Your Identification Code will exclusively be used to correlate both surveys you will answer in this term.**

1) What is the last letter of your first name?\*

- A
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q
- R
- S
- T
- U
- V
- W
- X
- Y

Z

2) What is the last digit of the year you were born?\*

1

2

3

4

5

6

7

8

9

0

3) What day of the month were you born?\*

01

02

03

04

05

06

07

08

09

10

11

12

13

14

15

16

17

18

19

20

21

- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31

4) Gender\*

- Male
- Female

5) Age

- 18 or less
- 18 - 24
- 25-34
- 35-54
- 55+

6) Name of online course I'm teacher of:

7) Language of course:

- Spanish
- English
- Other

8) 6) Degree in which you are teaching this subject:\*

- Bachelor's degree
- Diploma
- Master's degree
- Doctoral degree
- Other::

9) The program of study in which you are basing your answers:

10) My level of competence at using common computer application (word processing, spreadsheets, databases, and presentations) is:

- Beginner
- Intermediate
- Advanced

11) Number of semesters I have given online courses:

- 1-3
- 4-6
- 7-9
- 10+

12) How many hours a day are you connected to the internet? :

- 0-2 hours
- 3-5 hours
- 6-8 hours
- 9-12 hours
- more than 12 hours

13) How many hours a day are you connected to social networks (facebook, twitter, etc)? :

- 0-2 hours
- 3-5 hours
- 6-8 hours
- 9-12 hours
- more than 12 hours

14) How many hours a week do you devote to this course? :

- 0-2 hours
- 3-5 hours
- 6-8 hours
- 9-12 hours
- more than 12 hours

15) What time of the day do you generally use for doing the course tasks?:

- Morning
- Midday
- Afternoon

- Evenings
- Indifferent

16) Please select the number that represents your answer to each of the following questions using the scale:

1 = strongly disagree, 2= Disagree, 3= Agree y 4 = Strongly agree. Check NA only if an item is not applicable.\*

	1	2	3	4	N/A
• It's easy for learners to persist to achieve their goals.	<input type="checkbox"/>				
• I am confident that learners' abilities can help them to effectively deal with any unexpected event (personal or academic) during the term.	<input type="checkbox"/>				
• Learners know how to manage their time to do well in this course.	<input type="checkbox"/>				
• Learners can learn from discussion in forum.	<input type="checkbox"/>				
• Students can learn in this online educational environment.	<input type="checkbox"/>				
• I'm confident students can use technology to take part in this course.	<input type="checkbox"/>				
• This subject is relevant to learners' objectives.	<input type="checkbox"/>				
• Learners generally seemed motivated to do well in this course.	<input type="checkbox"/>				
• Learners need additional motivation from instructor to complete their tasks.	<input type="checkbox"/>				
• Learners should be able to apply knowledge obtained in other subjects in this subject.	<input type="checkbox"/>				
• Learners show some weaknesses in some areas of the course.	<input type="checkbox"/>				
• Learners count on prior knowledge for this course.	<input type="checkbox"/>				

• The course information learners received before enrolling gave them an accurate picture of the course	<input type="checkbox"/>				
• The expectations for the amount of coursework are fair	<input type="checkbox"/>				
• Learners will be able to keep up with the workload	<input type="checkbox"/>				

17) Please select the number that represents your answer to each of the following questions using the scale: 1 = strongly disagree, 2= Disagree, 3= Agree y 4 = Strongly agree. Check NA only if an item is not applicable.

	1	2	3	4	N/A
Learners' grades are directly related to the time they devote to study.	<input type="checkbox"/>				
Learners use quality time to do the tasks of this course.	<input type="checkbox"/>				
Learners enjoy the time they devote to the course.	<input type="checkbox"/>				
Leisure time in front of the computer has a positive influence in learners' academic performance in this course	<input type="checkbox"/>				
I think learners devote enough time to the course.	<input type="checkbox"/>				

---

Thank You!

Thank you for taking our survey. Your response is very important to us.

---

**Appendix F**  
**Request letter for the Second Survey for learners**

Mensajes para el cuestionario final

Estimado Alumno,

Hace unos meses te invitamos a participar en una investigación que tiene como objetivo entender mejor las variables educativas que intervienen en el buen funcionamiento de un curso en línea. Éste es el segundo y último cuestionario que necesitas completar, puedes contestarlo sin haber participado en el primero. Aquí se te preguntará sobre tus percepciones relacionadas con tu experiencia en la enseñanza en línea. Contestar este cuestionario no te llevará más de quince minutos. No existen respuestas correctas o incorrectas.

Puedes entrar al segundo cuestionario en el siguiente enlace

<http://edu.surveymzmo.com/s3/932958/Cuestionario-2-final-de-curso-Estudiantes-UPAEP>

Tus respuestas son muy importantes para nosotros y serán usadas estrictamente para esta investigación.

¡Agradecemos tu colaboración!

Armando Cortés

eLearn Center Universitat Oberta de Catalunya

Roc Boronat, 117

08018 Barcelona

Office: (34) 93450-5432

Fax: (34) 93450-5432

<http://elearncenter.uoc.edu>

Si tienes alguna pregunta o te gustaría saber más acerca de este proyecto, puedes contestar a este mensaje.

Para ser removido de esta lista, contesta este mensaje con el título "REMOVE"

## Appendix G

### Second Survey for learners

We would like to understand you as a student in the context of a subject you select. If you have more than one subject, please select the subject you would like to base your answers on for this survey. Your answers are confidential. The system creates an Identification Code by answering to the first three questions. Your Identification Code will exclusively be used to correlate both surveys you will answer in this term.

1) What is the last letter of your first name?\*

- A
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q
- R
- S
- T
- U
- V
- W
- X
- Y
- Z

2) What is the last digit of the year you were born?\*

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 0

3) What day of the month were you born?\*

- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- 09
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23

- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31

4) Gender\*

- Male
- Female

5) The subject on which you base your answers

6) Please select the number that represents your answer to each of the following questions using the scale: 1 = strongly disagree, 2= Disagree, 3= Agree y 4 = Strongly agree. Check NA only if an item is not applicable.

	1	2	3	4	N/A
I had access to adequate tools and resources (library, modules, etc.) to learn in this course.	<input type="checkbox"/>				
I received the technical support I needed when I had a problem.	<input type="checkbox"/>				
The instructor seemed concerned about my needs as a learner.	<input type="checkbox"/>				
The instructor actively encouraged me to participate in the course.	<input type="checkbox"/>				
I felt I was a part of a community of learners in this course.	<input type="checkbox"/>				
The instructor used effective teaching strategies.	<input type="checkbox"/>				
The instructor encouraged a variety of perspectives	<input type="checkbox"/>				
The teacher was knowledgeable about his/her	<input type="checkbox"/>				

field.					
All important site content was easy to locate and identify.	<input type="checkbox"/>				
The site provided a clear means of obtaining technical help.	<input type="checkbox"/>				
The media used were appropriate for the content.	<input type="checkbox"/>				
All assignments were returned with useful feedback from the instructor.	<input type="checkbox"/>				
The instructor responded promptly to my questions	<input type="checkbox"/>				
The instructor provided individualized guidance that met my needs.	<input type="checkbox"/>				
Online comments by other participants helped me to learn.	<input type="checkbox"/>				
I contributed to the learning environment by responding to my peers.	<input type="checkbox"/>				
I learned to value other points of view.	<input type="checkbox"/>				
Content was presented at an appropriate level for me.	<input type="checkbox"/>				
Content was relevant to the objectives of the course.	<input type="checkbox"/>				
Content was stimulating to me as a learner.	<input type="checkbox"/>				
The objectives of this course were evident in the learning activities.	<input type="checkbox"/>				
The course material was presented in ways that suggested future application.	<input type="checkbox"/>				
My grades have been directly related to learning objectives, activities and application of materials	<input type="checkbox"/>				

I was motivated to do well in this course.	<input type="checkbox"/>				
Apart from the mark I am expecting on this subject, this course was a useful learning experience	<input type="checkbox"/>				
I recommend other people to enroll in this online course.	<input type="checkbox"/>				
I learned from the activities assigned in the course.	<input type="checkbox"/>				
The course was relevant to my needs.	<input type="checkbox"/>				
I did well on assignments and tests.	<input type="checkbox"/>				
I can explain the content covered in this course to others.	<input type="checkbox"/>				
I have noticed the difference between my prior knowledge and the knowledge I gained by the end of the course.	<input type="checkbox"/>				
During the course, I have been conscious about my strengths and weaknesses in my learning.	<input type="checkbox"/>				
I can make correct decisions and solve problems with the knowledge I have gained in this course.	<input type="checkbox"/>				
I know how I will use the course knowledge in new situations.	<input type="checkbox"/>				
I have opportunities to apply the course knowledge.	<input type="checkbox"/>				
As a result of this course, I am able to apply my learning to other similar courses.	<input type="checkbox"/>				
As a result of this course, I am able to apply my knowledge to a different context, such as my personal or professional life.	<input type="checkbox"/>				
With the knowledge gained from this course, I can more broadly explore a problem in the field of study.	<input type="checkbox"/>				

I received adequate training on the Platform.	<input type="checkbox"/>				
---	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

7) Please select the number that represents your answer to each of the following questions using the scale: 1 = strongly disagree, 2= Disagree, 3= Agree y 4 = Strongly agree. Check NA only if an item is not applicable.\*

	1	2	3	4	N/A
By taking this online course I have saved time in comparison to a face-to-face course.	<input type="checkbox"/>				
This online course has encouraged my participation in comparison to face-to-face courses.	<input type="checkbox"/>				
The frequency in which I received questions and answers made me felt part of the group.	<input type="checkbox"/>				
Instructor could manage the time of assignments during the course.	<input type="checkbox"/>				
As time goes by, my involvement in the course has increased.	<input type="checkbox"/>				
The workload during the course was adequate for my rhythm of work.	<input type="checkbox"/>				
Time the teacher gives to me is enough.	<input type="checkbox"/>				
Time in online discussions favors my knowledge.	<input type="checkbox"/>				
Overall time is adequate for the contents of the course.	<input type="checkbox"/>				
Time for assignments is adequate.	<input type="checkbox"/>				
The time devoted to the course is worth.	<input type="checkbox"/>				
I immediately use knowledge I've acquired in this course in my personal and professional life.	<input type="checkbox"/>				

8) What was the most beneficial component of the course?

9) Which would be the most important concept you learned in this course?

10) How do you approach work/school differently given what you have learned in this course?

**Logic: Show/hide trigger exists.**

11) Would you accept having a 20-minute interview through Skype to give further explanation to your answers?

Yes

No

**Logic: Dynamically shown if "Would you accept having a 20-minute interview through Skype to give further explanation to your answers?" = Yes**

12) Type in your Skype user:

---

Thank You!

Thank you for taking our survey. Your answers are relevant to this research.

---

## **Appendix H**

### **Request letter for the Second Survey for Instructors**

Estimado Profesor,

Hace unos meses te invitamos a participar en una investigación que tiene como objetivo entender mejor las variables educativas que intervienen en el buen funcionamiento de un curso en línea. Éste es el segundo y último cuestionario que necesitas completar, puedes contestarlo sin haber participado en el primero. Aquí se te preguntará sobre tus percepciones relacionadas con tu experiencia en la enseñanza en línea. Contestar este cuestionario no te llevará más de quince minutos. No existen respuestas correctas o incorrectas.

Puedes entrar al segundo cuestionario en el siguiente enlace

<http://edu.surveymizmo.com/s3/932977/Cuestionario-2-final-de-curso-Profesores-UPAEP>

Tus respuestas son muy importantes para nosotros y serán usadas estrictamente para esta investigación.

¡Agradecemos tu colaboración!

Armando Cortés

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Fax: (34) 93450-5432

<http://elearncenter.uoc.edu>

Si tienes alguna pregunta o te gustaría saber más acerca de este proyecto, puedes contestar a este mensaje.

Para ser removido de esta lista, contesta este mensaje con el título “REMOVE”

## Appendix I Second Survey for Instructors

### Instructions

We would like to understand you as an instructor in the context of a subject you select. If you teach more than one subject, please select the subject you would like to base your answers on for this survey. Your answers are confidential. The system creates an Identification Code by answering to the first three questions. Your Identification Code will exclusively be used to correlate both surveys you will answer in this term.

1) What is the last letter of your first name?\*

- A
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q
- R
- S
- T
- U
- V
- W
- X
- Y

Z

2) What is the last digit of the year you were born?\*

1

2

3

4

5

6

7

8

9

0

3) What day of the month were you born?\*

01

02

03

04

05

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- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31

4) Gender\*

- Male
- Female

5) The subject on which you base your answers

6) Please select the number that represents your answer to each of the following questions using the scale: 1 = strongly disagree, 2= Disagree, 3= Agree y 4 = Strongly agree. Check NA only if an item is not applicable.\*

	1	2	3	4	NA
Learners have received adequate training on the Platform.	<input type="checkbox"/>				
Learners had access to adequate tools and resources (library, textbooks, etc.) to learn in this course.	<input type="checkbox"/>				
Learners have received the technical	<input type="checkbox"/>				

support they needed when they had a problem.					
Learners know that I am concerned about their needs as a learners.	<input checked="" type="checkbox"/>				
I have actively encouraged learners to participate in the course.	<input checked="" type="checkbox"/>				
I have developed a community sense among learners in this course.	<input checked="" type="checkbox"/>				
I have used effective teaching strategies.	<input checked="" type="checkbox"/>				
I have encouraged a variety of perspectives.	<input checked="" type="checkbox"/>				
I have abroad knowledge about his/her field.	<input checked="" type="checkbox"/>				
All important site content was easy to locate and identify.	<input checked="" type="checkbox"/>				

The platform provided a clear means of obtaining technical help.	<input type="checkbox"/>				
The technological media used were appropriate for the content.	<input type="checkbox"/>				
I returned all assignments with useful feedback.	<input type="checkbox"/>				
I responded promptly to learners' questions.	<input type="checkbox"/>				
I provided individualized guidance that met learners' needs.	<input type="checkbox"/>				
Online comments by other participants helped students to learn.	<input type="checkbox"/>				
Learners contributed to learning environment by responding their peers.	<input type="checkbox"/>				
Students	<input type="checkbox"/>				

learned to value other points of view.					
Content was presented at an appropriate level for learners.	<input checked="" type="checkbox"/>				
Content was relevant to the objectives of the course.	<input checked="" type="checkbox"/>				
Content was stimulating for learners.	<input checked="" type="checkbox"/>				
The objectives of this course were evident in the learning activities.	<input checked="" type="checkbox"/>				
The course material was presented in ways that suggested future application.	<input checked="" type="checkbox"/>				
Grades were directly related to learning objectives, activities and application of resources.	<input checked="" type="checkbox"/>				
Learners	<input checked="" type="checkbox"/>				

seemed motivated to do well in this course.					
Apart from the marks learners expected on this subject, this course was a useful learning experience.	<input checked="" type="checkbox"/>				
It is very likely that learners recommend other people to enrol in this online course.	<input checked="" type="checkbox"/>				
Students learned from the activities assigned in the course.	<input checked="" type="checkbox"/>				
The course was relevant to learners' needs.	<input checked="" type="checkbox"/>				
Learners did well on assignments and tests.	<input checked="" type="checkbox"/>				
Learners can explain the content covered in this course to others.	<input checked="" type="checkbox"/>				

I have noticed the difference between learners' prior knowledge and the knowledge they've gained by the end of the course.	<input type="checkbox"/>				
During the course, learners have been conscious about their strengths and weaknesses in their learning.	<input type="checkbox"/>				
Learners can make correct decisions and solve problems with the knowledge they have gained in this course.	<input type="checkbox"/>				
Learners know how to use the course knowledge in new situations.	<input type="checkbox"/>				
Learners have opportunities to apply the course knowledge.	<input type="checkbox"/>				
As a result of	<input type="checkbox"/>				

<p>this course, learners are able to apply their learning to other similar courses.</p>					
<p>As a result of this course, learners are able to apply their knowledge to a different context, such as their personal or professional life.</p>	<input type="checkbox"/>				
<p>With the knowledge learners have gained from this course, they can more broadly explore a problem in the field of study.</p>	<input type="checkbox"/>				

7) What do you consider was the most beneficial component of the course to meet your objectives?

8) Which would be the most important concept you presented in this course to learners?

An empty text input field with a light gray border. It features a vertical scrollbar on the right side and a horizontal scrollbar at the bottom, both with standard arrow and track icons.

9) How do you consider you have prepared learners to approach work/school regarding content and assignments taught in this course?

An empty text input field with a light gray border. It features a vertical scrollbar on the right side and a horizontal scrollbar at the bottom, both with standard arrow and track icons.

**Logic: Show/hide trigger exists.**

10) Would you accept having a 20-minute interview through Skype to give further explanation to your answers?

- Yes
- No

**Logic: Dynamically shown if "Would you accept having a 20-minute interview through Skype to give further explanation to your answers?" = Yes**

11) Type in your Skype user:

---

Thank You!

Thank you for taking our survey. Your answers are relevant to this research.

---

## Appendix J Reliability Statistics

### Reliability Statistics for Survey 1 y 2 Learners

Learners: Average Score and Reliability information for Each Scale (N=198)

	$\alpha$	$M$	$SD$	Number of items	Range
Learner Factors Institutional	0.92	3.17	0.60	15	1-4
Factors	0.94	3.14	0.57	24	1-4
Outcome Factors	0.93	3.16	0.57	15	1-4

*Note.*  $\alpha$  refers to Cronbach's alpha

### Reliability Statistics for Survey 1 y 2 Instructors

#### Cronbach's Alpha

Instructors: Average Score and Reliability information for Each Scale (N=40)

	$\alpha$	$M$	$SD$	Number of items	Range
Learner Factors Institutional	0.745	3	0.51	15	1-4
Factors	0.906	3.24	0.58	24	1-4
Outcome Factors	0.92	3.19	0.57	15	1-4

*Note.*  $\alpha$  refers to Cronbach's alpha

## Appendix K Average score and ANOVA for each item

Average score for each item and mean difference between learners and instructors.

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Q1ITEM1 Instructor	37	2.7568	.76031	.12499	2.5033	3.0103	2.00	4.00
Q1ITEM1 Learner	194	3.3351	.63254	.04541	3.2455	3.4246	1.00	4.00
Q1ITEM1 Total	231	3.2424	.68659	.04517	3.1534	3.3314	1.00	4.00
Q1ITEM2 Instructor	38	3.0000	.73521	.11927	2.7583	3.2417	1.00	4.00
Q1ITEM2 Learner	199	3.3317	.61180	.04337	3.2461	3.4172	1.00	4.00
Q1ITEM2 Total	237	3.2785	.64315	.04178	3.1962	3.3608	1.00	4.00
Q1ITEM3 Instructor	38	2.7368	.50319	.08163	2.5714	2.9022	2.00	4.00
Q1ITEM3 Learner	192	3.2760	.74626	.05386	3.1698	3.3823	1.00	4.00
Q1ITEM3 Total	230	3.1870	.73870	.04871	3.0910	3.2829	1.00	4.00
Q1ITEM4 Instructor	40	3.2000	.79097	.12506	2.9470	3.4530	1.00	4.00
Q1ITEM4 Learner	200	3.2350	.75006	.05304	3.1304	3.3396	.00	4.00
Q1ITEM4 Total	240	3.2292	.75544	.04876	3.1331	3.3252	.00	4.00
Q1ITEM5 Instructor	40	3.4250	.54948	.08688	3.2493	3.6007	2.00	4.00
Q1ITEM5 Learner	195	3.1282	.67272	.04817	3.0332	3.2232	1.00	4.00
Q1ITEM5 Total	235	3.1787	.66182	.04317	3.0937	3.2638	1.00	4.00
Q1ITEM6 Instructor	39	3.2821	.60475	.09684	3.0860	3.4781	2.00	4.00
Q1ITEM6 Learner	190	3.1684	.70752	.05133	3.0672	3.2697	1.00	4.00
Q1ITEM6 Total	229	3.1878	.69119	.04568	3.0978	3.2778	1.00	4.00
Q1ITEM7 Instructor	40	3.0750	.85896	.13581	2.8003	3.3497	.00	4.00
Q1ITEM7 Learner	200	2.9600	.84971	.06008	2.8415	3.0785	.00	4.00
Q1ITEM7 Total	240	2.9792	.85054	.05490	2.8710	3.0873	.00	4.00
Q1ITEM8 Instructor	40	3.0250	.73336	.11595	2.7905	3.2595	.00	4.00
Q1ITEM8 Learner	200	3.1750	.87648	.06198	3.0528	3.2972	.00	4.00
Q1ITEM8 Total	240	3.1500	.85472	.05517	3.0413	3.2587	.00	4.00
Q1ITEM9 Instructor	40	2.5500	.93233	.14741	2.2518	2.8482	.00	4.00
Q1ITEM9 Learner	200	3.2350	.70160	.04961	3.1372	3.3328	.00	4.00
Q1ITEM9 Total	240	3.1208	.78558	.05071	3.0209	3.2207	.00	4.00
Q1ITEM10 Instructor	40	3.1250	.96576	.15270	2.8161	3.4339	.00	4.00
Q1ITEM10 Learner	200	2.7850	.90713	.06414	2.6585	2.9115	.00	4.00
Q1ITEM10 Total	240	2.8417	.92384	.05963	2.7242	2.9591	.00	4.00
Q1ITEM11 Instructor	39	2.7179	.79302	.12698	2.4609	2.9750	1.00	4.00
Q1ITEM11 Learner	196	3.0255	.69751	.04982	2.9273	3.1238	1.00	4.00
Q1ITEM11 Total	235	2.9745	.72160	.04707	2.8817	3.0672	1.00	4.00
Q1ITEM12 Instructor	38	2.7105	.80229	.13015	2.4468	2.9742	1.00	4.00
Q1ITEM12 Learner	195	2.9077	.78759	.05640	2.7965	3.0189	1.00	4.00
Q1ITEM12 Total	233	2.8755	.79163	.05186	2.7734	2.9777	1.00	4.00
Q1ITEM13 Instructor	32	2.9375	.56440	.09977	2.7340	3.1410	2.00	4.00
Q1ITEM13 Learner	195	3.1641	.62898	.04504	3.0753	3.2529	1.00	4.00
Q1ITEM13 Total	227	3.1322	.62413	.04142	3.0505	3.2138	1.00	4.00
Q1ITEM14 Instructor	40	2.8500	.57957	.09164	2.6646	3.0354	2.00	4.00
Q1ITEM14 Learner	192	3.1302	.66216	.04779	3.0359	3.2245	1.00	4.00
Q1ITEM14 Total	232	3.0819	.65612	.04308	2.9970	3.1668	1.00	4.00
Q1ITEM15 Instructor	39	3.1282	.65612	.10506	2.9155	3.3409	1.00	4.00
Q1ITEM15 Learner	193	3.0415	.69847	.05028	2.9423	3.1406	1.00	4.00
Q1ITEM15 Total	232	3.0560	.69092	.04536	2.9667	3.1454	1.00	4.00

Group Statistics

	LEARNERINSTRUCTOR	N	Mean	Std. Deviation	Std. Error Mean
Q2ITEM1	Instructor	40	3.1500	.69982	.11065
	Learner	197	3.2487	.52882	.03768
Q2ITEM2	Instructor	40	3.1500	.57957	.09164
	Learner	196	3.1480	.61897	.04421
Q2ITEM3	Instructor	36	3.0278	.77408	.12901
	Learner	170	3.1824	.65879	.05053
Q2ITEM4	Instructor	40	3.3500	.57957	.09164
	Learner	197	3.0812	.70240	.05004
Q2ITEM5	Instructor	40	3.3750	.58562	.09259
	Learner	192	2.9948	.78931	.05696
Q2ITEM6	Instructor	40	3.0750	.72986	.11540
	Learner	195	2.9692	.75237	.05388
Q2ITEM7	Instructor	40	3.2000	.46410	.07338
	Learner	195	2.9436	.80071	.05734
Q2ITEM8	Instructor	40	3.1500	.76962	.12169
	Learner	193	2.9326	.79754	.05741
Q2ITEM9	Instructor	40	3.5000	.64051	.10127
	Learner	196	3.3929	.56727	.04052
Q2ITEM10	Instructor	40	3.0250	.86194	.13629
	Learner	198	3.0354	.67873	.04824
Q2ITEM11	Instructor	39	2.9744	.77755	.12451
	Learner	181	3.0110	.57724	.04291
Q2ITEM12	Instructor	40	3.1750	.59431	.09397
	Learner	198	3.1313	.50674	.03601
Q2ITEM13	Instructor	38	3.2105	.84335	.13681
	Learner	197	2.8629	.84907	.06049
Q2ITEM14	Instructor	39	3.3077	.89307	.14301
	Learner	188	3.2021	.75402	.05499
Q2ITEM15	Instructor	40	3.2500	.58835	.09303
	Learner	181	2.9724	.83287	.06191
Q2ITEM16	Instructor	38	3.4211	.59872	.09712
	Learner	197	3.2843	.63117	.04497
Q2ITEM17	Instructor	40	3.2000	.75786	.11983
	Learner	194	3.0052	.67905	.04875
Q2ITEM18	Instructor	40	3.1750	.81296	.12854
	Learner	193	3.2280	.61224	.04407
Q2ITEM19	Instructor	40	3.0750	.91672	.14495
	Learner	199	3.0402	.62635	.04440
Q2ITEM20	Instructor	40	3.4000	.63246	.10000
	Learner	200	3.1000	.66499	.04702
Q2ITEM21	Instructor	40	3.2750	.59861	.09465
	Learner	194	3.1546	.69551	.04993
Q2ITEM22	Instructor	40	3.4000	.59052	.09337
	Learner	199	3.1256	.64299	.04558
Q2ITEM23	Instructor	39	3.1795	.72081	.11542
	Learner	194	3.0670	.69091	.04960
Q2ITEM24	Instructor	40	3.2750	.78406	.12397
	Learner	189	3.1481	.63519	.04620
Q2ITEM25	Instructor	40	3.1750	.63599	.10056
	Learner	195	3.3487	.65914	.04720
Q2ITEM26	Instructor	40	3.2500	.54302	.08586
	Learner	200	3.3400	.63752	.04508
Q2ITEM27	Instructor	40	2.8250	1.03497	.16364
	Learner	192	3.2865	.76317	.05508
Q2ITEM28	Instructor	40	3.2500	.74248	.11740
	Learner	197	3.3096	.61492	.04381
Q2ITEM29	Instructor	40	3.1750	.71208	.11259
	Learner	198	3.1263	.69751	.04957
Q2ITEM30	Instructor	40	3.1250	.75744	.11976
	Learner	196	3.1224	.77480	.05534
Q2ITEM31	Instructor	40	3.1000	.98189	.15525
	Learner	198	3.0303	.69010	.04904
Q2ITEM32	Instructor	40	3.2000	.82275	.13009
	Learner	199	3.2111	.76915	.05452
Q2ITEM33	Instructor	40	3.0000	.81650	.12910
	Learner	200	3.2300	.70682	.04998
Q2ITEM34	Instructor	39	3.2051	.61471	.09843
	Learner	198	2.8586	.76749	.05454
Q2ITEM35	Instructor	37	3.0541	.70498	.11590
	Learner	199	3.0402	.72362	.05130
Q2ITEM36	Instructor	40	3.1500	.73554	.11630
	Learner	200	2.9300	.80520	.05694
Q2ITEM37	Instructor	38	3.2368	.63392	.10283
	Learner	200	3.2050	.62040	.04387
Q2ITEM38	Instructor	40	3.2500	.58835	.09303
	Learner	200	3.1950	.67024	.04739
Q2ITEM39	Instructor	39	3.2821	.55954	.08960
	Learner	200	3.0900	.70312	.04972

ANOVA to compare the perceptions of learners and instructors.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Q1ITEM1	Between Groups	10.392	1	10.392	24.275	.000
	Within Groups	98.032	229	.428		
	Total	108.424	230			
Q1ITEM2	Between Groups	3.510	1	3.510	8.764	.003
	Within Groups	94.111	235	.400		
	Total	97.620	236			
Q1ITEM3	Between Groups	9.223	1	9.223	18.168	.000
	Within Groups	115.738	228	.508		
	Total	124.961	229			
Q1ITEM4	Between Groups	.041	1	.041	.071	.790
	Within Groups	136.355	238	.573		
	Total	136.396	239			
Q1ITEM5	Between Groups	2.924	1	2.924	6.842	.009
	Within Groups	99.570	233	.427		
	Total	102.494	234			
Q1ITEM6	Between Groups	.418	1	.418	.874	.351
	Within Groups	108.508	227	.478		
	Total	108.926	228			
Q1ITEM7	Between Groups	.441	1	.441	.608	.436
	Within Groups	172.455	238	.725		
	Total	172.896	239			
Q1ITEM8	Between Groups	.750	1	.750	1.027	.312
	Within Groups	173.850	238	.730		
	Total	174.600	239			
Q1ITEM9	Between Groups	15.641	1	15.641	28.232	.000
	Within Groups	131.855	238	.554		
	Total	147.496	239			
Q1ITEM10	Between Groups	3.853	1	3.853	4.582	.033
	Within Groups	200.130	238	.841		
	Total	203.983	239			
Q1ITEM11	Between Groups	3.077	1	3.077	6.036	.015
	Within Groups	118.770	233	.510		
	Total	121.847	234			
Q1ITEM12	Between Groups	1.236	1	1.236	1.981	.161
	Within Groups	144.154	231	.624		
	Total	145.391	232			
Q1ITEM13	Between Groups	1.412	1	1.412	3.666	.057
	Within Groups	86.624	225	.385		
	Total	88.035	226			
Q1ITEM14	Between Groups	2.599	1	2.599	6.173	.014
	Within Groups	96.845	230	.421		
	Total	99.444	231			
Q1ITEM15	Between Groups	.244	1	.244	.510	.476
	Within Groups	110.027	230	.478		
	Total	110.272	231			

## ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Q2ITEM1	Between Groups	.324	1	.324	1.030	.311
	Within Groups	73.912	235	.315		
	Total	74.236	236			
Q2ITEM2	Between Groups	.000	1	.000	.000	.985
	Within Groups	87.809	234	.375		
	Total	87.809	235			
Q2ITEM3	Between Groups	-.710	1	-.710	1.535	.217
	Within Groups	94.319	204	.462		
	Total	95.029	205			
Q2ITEM4	Between Groups	2.402	1	2.402	5.141	.024
	Within Groups	109.801	235	.467		
	Total	112.203	236			
Q2ITEM5	Between Groups	4.785	1	4.785	8.315	.004
	Within Groups	132.370	230	.576		
	Total	137.155	231			
Q2ITEM6	Between Groups	-.371	1	-.371	.663	.417
	Within Groups	130.590	233	.560		
	Total	130.962	234			
Q2ITEM7	Between Groups	2.182	1	2.182	3.829	.052
	Within Groups	132.779	233	.570		
	Total	134.962	234			
Q2ITEM8	Between Groups	1.565	1	1.565	2.490	.116
	Within Groups	145.224	231	.629		
	Total	146.790	232			
Q2ITEM9	Between Groups	.381	1	.381	1.133	.288
	Within Groups	78.750	234	.337		
	Total	79.131	235			
Q2ITEM10	Between Groups	.004	1	.004	.007	.933
	Within Groups	119.728	236	.507		
	Total	119.731	237			
Q2ITEM11	Between Groups	.043	1	.043	.114	.736
	Within Groups	82.952	218	.381		
	Total	82.995	219			
Q2ITEM12	Between Groups	.064	1	.064	.233	.630
	Within Groups	64.361	236	.273		
	Total	64.424	237			
Q2ITEM13	Between Groups	3.849	1	3.849	5.350	.022
	Within Groups	167.615	233	.719		
	Total	171.464	234			
Q2ITEM14	Between Groups	-.360	1	-.360	.593	.442
	Within Groups	136.627	225	.607		
	Total	136.987	226			
Q2ITEM15	Between Groups	2.525	1	2.525	3.997	.047
	Within Groups	138.362	219	.632		
	Total	140.887	220			
Q2ITEM16	Between Groups	.596	1	.596	1.520	.219
	Within Groups	91.344	233	.392		
	Total	91.940	234			
Q2ITEM17	Between Groups	1.259	1	1.259	2.622	.107
	Within Groups	111.395	232	.480		
	Total	112.654	233			
Q2ITEM18	Between Groups	.093	1	.093	.220	.640
	Within Groups	97.744	231	.423		
	Total	97.837	232			
Q2ITEM19	Between Groups	.040	1	.040	.087	.769
	Within Groups	110.453	237	.466		
	Total	110.494	238			
Q2ITEM20	Between Groups	3.000	1	3.000	6.892	.009
	Within Groups	103.600	238	.435		
	Total	106.600	239			
Q2ITEM21	Between Groups	.480	1	.480	1.038	.309
	Within Groups	107.336	232	.463		
	Total	107.816	233			
Q2ITEM22	Between Groups	2.507	1	2.507	6.225	.013
	Within Groups	95.459	237	.403		
	Total	97.967	238			
Q2ITEM23	Between Groups	-.411	1	-.411	.848	.358
	Within Groups	111.872	231	.484		
	Total	112.283	232			
Q2ITEM24	Between Groups	.531	1	.531	1.208	.273
	Within Groups	99.827	227	.440		
	Total	100.358	228			
Q2ITEM25	Between Groups	1.002	1	1.002	2.332	.128
	Within Groups	100.062	233	.429		
	Total	101.064	234			
Q2ITEM26	Between Groups	-.270	1	-.270	.696	.405
	Within Groups	92.380	238	.388		
	Total	92.650	239			
Q2ITEM27	Between Groups	7.049	1	7.049	10.595	.001
	Within Groups	153.020	230	.665		
	Total	160.069	231			
Q2ITEM28	Between Groups	-.118	1	-.118	.291	.590
	Within Groups	95.612	235	.407		
	Total	95.730	236			
Q2ITEM29	Between Groups	-.079	1	-.079	.161	.688
	Within Groups	115.618	236	.490		
	Total	115.697	237			
Q2ITEM30	Between Groups	.000	1	.000	.000	.985
	Within Groups	139.436	234	.596		
	Total	139.436	235			
Q2ITEM31	Between Groups	-.162	1	-.162	.290	.591
	Within Groups	131.418	236	.557		
	Total	131.580	237			
Q2ITEM32	Between Groups	-.004	1	-.004	.007	.935
	Within Groups	143.536	237	.606		
	Total	143.540	238			
Q2ITEM33	Between Groups	1.763	1	1.763	3.346	.069
	Within Groups	125.420	238	.527		
	Total	127.183	239			
Q2ITEM34	Between Groups	3.913	1	3.913	7.052	.008
	Within Groups	130.399	235	.555		
	Total	134.312	236			
Q2ITEM35	Between Groups	.006	1	.006	.012	.915
	Within Groups	121.570	234	.520		
	Total	121.576	235			
Q2ITEM36	Between Groups	1.613	1	1.613	2.558	.111
	Within Groups	150.120	238	.631		
	Total	151.733	239			
Q2ITEM37	Between Groups	.032	1	.032	.084	.773
	Within Groups	91.463	236	.388		
	Total	91.496	237			
Q2ITEM38	Between Groups	-.101	1	-.101	.233	.630
	Within Groups	102.895	238	.432		
	Total	102.996	239			
Q2ITEM39	Between Groups	1.204	1	1.204	2.587	.109
	Within Groups	110.277	237	.465		
	Total	111.481	238			

## **Appendix L**

### **Publications Derived from this Study**

Cortés A. & Barbera E., (2013) *Cultural Differences in Students' Perceptions Towards Online Learning Success Factors*, Paper presented at the 12th European Conference on E-Learning (ECEL-2013), At Nice, France.

Cortés A. & Barbera E.; (2013) Time patterns and perceptions of online learning success factors. *eLC Research Paper Series*. 7, pp. 30 -35.

Cortés A. & Barbera E., (2013) *Cross-Cultural Differences in Students' Perceptions of Online Learning Success Factors*, Poster session presented at the First UOC International Research Symposium, Barcelona, Spain.

Cortés A. & Barbera E., (2013) *Predictors of student satisfaction, knowledge acquisition and knowledge transfer in an online Course*. Paper presented at the 15th Biennial Conference of the European Association for Research in Learning and Instruction (EARLI). Munich, Germany at the Technische Universität München (TUM) from the 27th to the 31st August 2013

Cortés, A. & Barbera, E. (2013) *Students' Perceptions Towards Online Learning Success Factors*, Paper presented at the 5th annual International Conference on Education and New Learning Technologies EDULEARN 2013, 1 to 3 July 2013. Barcelona, Spain.

Cortés, A. & Barbera, E. (2012) *Online Learning Success Factors: Learner and Instructors' perceptions*. Paper presented at the International networking conference for PhD candidates in Educational Sciences organised by the Interuniversity Center for Educational Sciences in the Netherlands, 5 to 10 November 2012.

