Escenarios de aprendizaje y satisfacción estudiantil en posgrado virtual 2010-2014-2015

Learning and student satisfaction in postgraduate virtual scenarios 2010-2014-2015

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Palabras clave
Educación, educación virtual, escenarios de aprendizaje, redes de conocimiento, aprendizaje colaborativo

RESUMEN

Uno de los signos actuales en la historia de la humanidad es la unión electrónica del planeta, la cual se manifiesta por la presencia de las tecnologías de la información y la comunicación en todos los ámbitos del quehacer humano, incluida la educación; esto ha generado nuevos paradigmas que demandan la actualización tecnológica, formación de docentes y análisis de los procesos en las instituciones educativas, de ahí la importancia de llevar a cabo esta investigación, a partir de un estudio de caso cuyo propósito es analizar los escenarios de aprendizaje y la satisfacción de los estudiantes de posgrado virtual de la Universidad Autónoma de Chihuahua en tres periodos: 2010, 2014 y 2015. Los métodos aplicados fueron el analítico-sintético y el teórico-deductivo. Las técnicas fueron bibliográficas, encuesta y entrevista estructurada. Los resultados reflejan la tendencia al trabajo individual y la necesidad de incorporar más el aspecto creativo en las tareas que se solicitan, lograr una interacción más fuerte entre los actores involucrados en el proceso y mayor compromiso de los docentes en las tutorías y en la alfabetización digital, así como estimular el trabajo colaborativo y el aprendizaje conectivo entre los estudiantes a fin de que la educación virtual sea de calidad.

Keywords
Education, e-learning, learning scenarios, nets of knowledge, collaborative learning

ABSTRACT

One of the existing signs in the history of mankind in the electronic union of the planet, which manifests itself by the presence of ICT in all spheres of human endeavor, including education, this has generated new paradigms that demand technological updating, teacher training and analysis of the processes in educational institutions. Hence the importance of carrying out this research, from a case study, with the purpose to analyze, learning scenarios and satisfaction of virtual learning mode graduate students of the Autonomous University of Chihuahua in three periods: 2010, 2014 y 2015. Methods used were analytical-synthetic and theoretical-deductive. The techniques were bibliographic, survey, and structured interview. Results reflect a tendency to individual work and the need to incorporate a more creative aspect in the tasks that teachers ask for, also, it reveals the need of more interaction between involved actors in the process, more teachers' commitment in tutorial work and in digital alphabetization, as well as the need to stimulate collaborative work and connective learning between students. All this to attain more quality in virtual education.

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INTRODUCTION

In the 21st century the electronic unification of the planet (Anderson, 2000) has become ever more evident. This is something which, through information and communication technology (ICT), has become a network that has generated virtual spaces through which human beings generate knowledge, interact, and interrelate in previously unimaginable ways. This type of technology is increasingly present in society's daily life and computers have been joined by a growing legion of new gadgets: mobile phones, tablets, and electronic books, among others. This has all modified the ways in which people act reciprocally (Gutiérrez and Gómez, 2015).

This is the case in education, which is a social process of communication determined by a context and by the views of the world possessed by its actors, professors and students, who actually find themselves modified by new schemata of socialization and communication (Guzmán, 2008).

Since the technological revolution began, new paradigms have been created in all sectors; for this reason, it should come as no surprise that the use of technology has generated new educational practices of an expressly teleological nature, in this case: teaching and learning as a fundamental part of the formation of the subjects of learning (Ferreiro and De Napoli, 2006).

The above makes it necessary to study how these instruments have transcended in education, to which they have incorporated the modality of the virtual, whose immediate antecedent was distance education. We should point out that the technologies are not what is most important; it is a question of how they are used, seen as a means rather than an end. That is to say, it isn´t just knowing how to use them, but rather appropriating them for the purpose of constructing a new way of looking at the knowledge of different sciences (Galindo, 2015), in particular in spaces where socialization happens online.

The Autonomous University of Chihuahua (UACH), attentive to the needs on the national scene and in a globalized world, as well as the requirements of the member nations of the Organisation for Economic Co-operation and Development, set in motion, beginning in the year 2000, an online master's degree program. The Department of Accounting and Administration (FCA) initiated a post-grad in Administration; to date, it offers six online programs at the mentioned level, in which ICTs play a fundamental role (Mata and Garibay, 2016).

Education mediated by ICT has modified the academic environment and the ways of imparting education, as well as the spaces and the time of education; for this reason, it becomes important to investigate the changes originated by ICT in terms of academic processes and modes of interaction with information and knowledge, as well as the concretion of its integration in the formation and the real conditions in which such

experiences are realized in virtual education (Castells, 1997; Guarro, 2005; Coll, Mauri, and Onrubio, 2008); likewise, this needs to be followed up on, with the goal of finding the elements that will allow for the continual improvement of the processes.

The objective of this work was to analyze the valuation of the scenes of learning of the postgraduate students in the virtual modality, of the academic cycles of September-December 2010, with respect to those who studied the same master's program in September-December 2014 and January-April 2015, in the FCA of the UACH.

With the idea of having a common framework of shared meanings, we present the concepts of education, virtual education, learning scenarios, educational conditions and satisfaction, methodology, as well as results and conclusions.

THEORETICAL FRAMEWORK

The word education derives from the Latin terms *educāre* and *exducĕre*. The first of these means "to nourish, raise" and the second means "to carry, conduct, 'pull out', extract." In this way, extensively, the word education signifies the process by which nourishment and assistance is given to the person so that he might extract all his potential, apply it and manifest it his most holistic formation (Dewey, 2004, quoted in Arras, Martínez, and Jáquez, 2008). This conception implies permanent teaching and learning, at the same time it remits us to guidance and care of the teacher and presupposes the development and perfection of the intellectual faculties, ethics, and morals of the student. Thus, education requires socialization, the potentialization of capabilities so that they flourish and discover knowledge through experience and in interaction with context, that he might learn to learn throughout his entire life (Paidacan, 2010) in the dim ambiance of change that characterize this epoch of humanity.

The educational paradigms that until recently have contributed elements to explain human processes of teaching and learning have been behaviorism, cognitivism, and constructivism (Cabero and Llorente, 2015); however,

> the conception that one has today of learning is necessarily different from that which dominated in post-industrial society, so that when faced with a conception of learning such as memorization of information, the conception of learning opens itself up like a connection, mixture, and restructuring of information (Cabero and Llorente, 2015, p. 191).

One could consider aspects of collaborative and cognitive focus in order to approach this last one from the perspective of connectivity, as well as from the characterization of ubiquity that permits the use of ICT (Gros and Noguera, 2013).

The theory of connectivity defines learning as a process that takes place in a dim ambiance of change and that are not completely under the control of individuals. Learning is defined as processable knowledge that can reside outside of ourselves (in an organization or a database); it is oriented toward groups of specialized information and to connections that allow us to learn more. It is based on individual ideas and opinions, valuation of diversity in the perspectives of others, permanent learning, the construction of relationships, interdisciplinary connections, actual information and the taking of risks, the same principles that one can find in various of today's technologies that the students utilize every day: Facebook, WhatsApp, Wikis, YouTube, among others (Islas and Delgadillo, 2016, p. 120).

This vision proposes a challenge to the educational institutions, which are desperately trying to create scenarios containing forms of agroupment and pedagogical techniques to try to deal with knowledge, type of activities, objectives, didactic materials, evaluative practices, conditions of teaching (García and Arras, 2011) and satisfaction, in order to promote learning and education that is harmonious with the circumstances in which humanity lives, where networks of learning are developed, which, "... from the actions in which the students engage while working in teams, serve to reinforce their knowledge and select information on the basis of their criteria" (Islas and Delgadillo, 2016, p. 127).

The referred to educational process involves a triad: the student the instructor, and the institution. The latter will have to design training courses to educate both teachers and some of the students in the use of ICT, given that ICT plays a key role in today's processes of transmission and generation of knowledge (Mata and Garibay, 2016), especially in virtual environments. The attitude and motivation that teachers have toward ICT is a key element in its integration into academic processes (Copriady, 2014; Torres, Kiss, and Lagunes, 2015), as is their level of digital literacy for its technical and didactic utilization (Cabero, 2014).

Recent studies suggest that the real challenge is, more than the technological training of teachers, their methodological training, which includes the use of more adequate tools, among them ICT, to design quality learning activities based on the principles of educational models derived from the theory of connectivity (Cabero and Llorente, 2015), focused on the selection and construction of knowledge. This derives from what the students are able to share, collaborate on, discuss or reflect on with their companions and teachers, in accord with their areas of interest (Islas and Delgadillo, 2016) and by means of situations that generate the need to share and work with others (Gros and Noguera, 2013).

Collaboration in the university environment presents some advantages in the process of teaching-learning, such as shared responsibility, the exchange of information, and the creation of shared knowledge (Soto and Torres, 2016), all of which being accompanied by openness to an effective

methodology in the use of technological tools (García, Gómez, Cabezas, Casillas, González, Hernández, and Mena, 2015). In such a dynamic, the beneficial incorporation of ICT into academic life depends, in addition to the teachers, institutions, and students, on an institutional armature that is favorable for qualitative changes in education. Such changes are possible when there are economic and professional resources available.

Advancement in the process of the technologization of teaching-learning and the corresponding improvement in educational quality imply betting on more adequate preparation of faculty members (Tello and Cascales, 2015). The perspective of the formation and cooperation of teachers and the assistance of educational institutions is very important, given that the generation of telematics with ICT has augmented the flexibility of contents on the students' part. In today's world, online learning offers valuable educational resources in multiple media, in addition to the capacity for synchronic and asynchronous communication between teachers and students, as well as between the subjects of learning (Marqués, 2008; U.S. Department of Education: Office of Planning, Evaluation, and Policy Development´s Policy and Program Studies Service, 2009) and those who administer education. The latter, together with the actors involved in the process, ought to consider the design, implementation, and evaluation of courses (Flores, López, and Rodríguez, 2016), all of which relates to the conditions in which teaching occurs.

It is important to consider that, thanks to technology, one has access to a tremendous quantity of information, which should not be confused with knowledge, since the latter requires the encouragement of critical thought, involving reflection, structuration, and personal valuation of thematic content, as well as a modification in the role of the teacher, who becomes a facilitator of learning (Cabero, 2000). In addition, it is necessary to give impetus to the commitment of academic faculty to explore new forms of communication with their students, with the supposition that the former understand the relevance for the latter of maintaining contact with them (Flores, López, and Rodríguez, 2016) in the process of teaching-learning, by means of which the subjects who have incentive, will achieve a sense of satisfaction, which implies motivation.

Motivation is the internal impulse produced by humans' needs that orients them toward action, and it can be considered as the process that awakens, unchains, directs, and maintains human behavior toward that which is considered important (González and Olivares, 2003). Normal behavior obeys certain causes that are related to a person's necessities or the consequences of their acts (Davis and Newstrom, 2003), because all human action awaits results, responses, effects. When these are perceived, the person experiences satisfaction, given that their acts have acquired meaning. The satisfaction this produces functions psychically as an optimization of cerebral feedback (González, 2001), which establishes or orients the resolution of need in the individual.

METHODOLOGY

This investigation is based on a case study, "...which contributes to the enlargement and deepening of knowledge with respect to individuals and groups, as well as organizations and related phenomena" (Yin, 2003, p. 4). The methods utilized were analytic-synthetic and theoretic-deductive. The research was of a mixed nature: quantitative, given that it collects data in stages; and qualitative, since it took into consideration the expressions of students, obtained through a structured interview. It is of a descriptive type, with methodology applied in the field and supported by bibliographic sources.

The techniques of information collection were bibliographic: the survey, whose resources constituted the instruments generated for the project "ICT Competency and Academic Results in the University: Gender Differences," by García and Arras (2011); the questionnaire about student satisfaction, designed in the project "Academic Satisfaction in University Students," by Arras, Martínez, and Jáquez (2008); as well as the statistics, which utilized SPSS version 20.0.

The questionnaire consists of items referring to students' perception of the ways in which they were grouped for the realization of their academic assignments, activities that were requested of them, teaching techniques, utilized materials, and evaluation practices. We also requested ratings of the teaching conditions and of the factors that gave them satisfaction, or not, in the course of their online postgraduate studies. Table 1 contains an example of one question for each category.

Table 1. Example of items in each category proposed by the questionnaire

(Instructions) Place an "X" on the option you consider was utilized most frequently in the coursework you undertook in the online postgraduate program.				
Characteristics of coursework	**Categories**	**Frequency 1=Never 2=Sometimes 3=Frequently**		
Type of groups used for realizing work assignments	Individual	1	2	3
	Small groups	1	2	3

	Full class group	1	2	3

Conditions of the teaching

(Instructions) Indicate the degree to which the following aspects of the teaching you experienced in the master's program have been adequate or not.

	Not at all Adequate	**Not Very Adequate**	**Normal**	**Somewhat Adequate**	**Very Adequate**
Evaluation of the conditions of the teaching					
Level of interaction of the students					

Satisfaction

In terms of the satisfaction you feel with respect to the academic aspects and conditions of teaching, please mark with an "X" the option you consider appropriate, according to the following:

HA = Highly Agree; A = Agree; I = Indifferent; D = Disagree; HD = Highly Disagree.

	HA	**A**	**I**	**D**	**HD**
I am satisfied with the master's program I studied					

With the goal of carrying out a comparative examination of the evolution of this type of education, the universe of study was made up of online postgraduate students who studied in the program offered over the Moodle course management system (CMS) platform during three periods—2010, 2014, and 2015—, for which reason the study constitutes a longitudinal investigation.

We considered the responses of those who answered voluntarily: 22 of 45 in the first period; 42 of 200 in the second; and 55 of 198 in the third. From these, there emerged the need to utilize Bootstrap, a technique of resampling of statistical analysis that uses the information of the sample to estimate, through the data itself, properties of the statistical estimators (Ledesma, 2008). In other words, we utilized the original sampling to generate, on the basis of the sampling, new samplings that serve as a basis for evaluating, inductively, the form of the distribution of the statistical sample, instead of departing from *a priori* theoretical distribution (Gil, 2005). In using this technique, the results demonstrate a statistical confidence level of 95%.

Table 2. Bootstrap specifications

Método de muestreo	Simple
Número de muestras	1 000
Nivel de intervalo de confianza	95.0%
Tipo de intervalo de confianza	Percentil

INSTRUMENT RELIABILITY

To determine the reliability of the data, we relied on the technique of Cronbach's Alpha, which gave measurements between 0.7 and 0.975. This demonstrated that the results were reliable, given that a reading of 0.7 is acceptable, 0.8 is good, and 0.9 excellent (Frías, 2014); see Table 3.

Table 3. Statistics of instrument reliability

	Alfa de Cronbach	Número de elementos en el cuestionario
Agrupamiento para realizar tareas e interacción en el aprendizaje	.742	8
Actividades y técnicas de enseñanza	.783	11
Materiales didácticos	.7	5
Técnicas de evaluación	.746	4
Condiciones de la docencia	.925	10
Satisfacción	.847	9

The analysis of the learning scenarios was made using a systemic focus, which considers them as a whole, composed of various parts or subsystems, each of which possesses its own characteristics but which, in being grouped together, produce an emergency—that is to say, a superior status or quality, irreducible to the isolated parts. These subsystems are: a) actors; b) the form of agroupment for approaching knowledge; c) type of activities, objectives, didactic materials, and evaluation practices; on the basis of the forms and types, one can visualize learning scenarios according to whether they are reproductive, professional, and critical or creative; d) teaching conditions, to which are added the interactions and resources, contents, commitment, and consistency; in this last category, evaluation is made of the relationship between the evaluation system, the objectives, the contents, and the works that are realized in class; e) satisfaction of the actors who have been integrated into the learning scenarios. This reflection has been schematized and presented in the Figure.

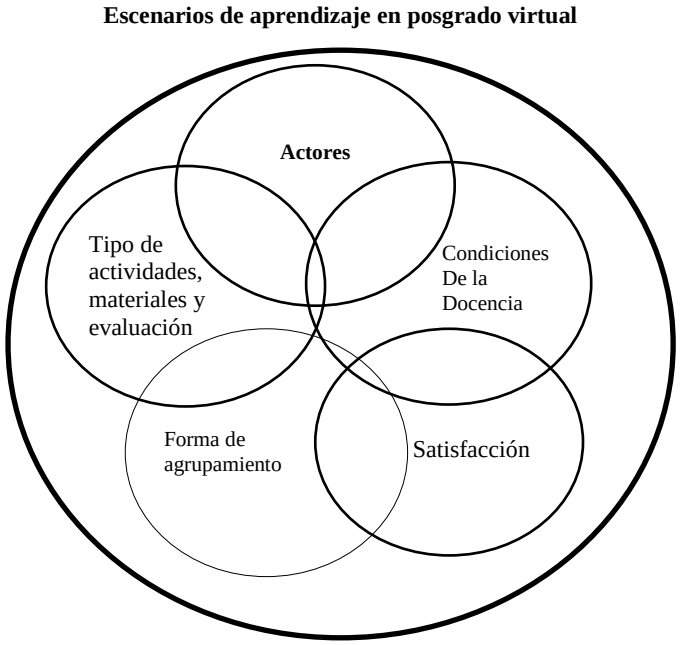

Figure. Learning scenarios in the online postgraduate modality of the Department of Accounting and Administration (FCA) at the Autonomous University of Chihuahua (UACH).
Source: self-created, based on the systemic focus.

RESULTS

In principle, we can affirm that the actors in the field of education are students, teachers, and institutions, first subsystem of the learning scenarios. This section begins with the revelation of results based on the subsystem: forms of agroupment; it then presents the types of activities, materials utilized and modes of evaluation, followed by the evaluation of

the teaching conditions; it closes with the student satisfaction level regarding the online postgraduate program of the FCA at the UACH.

Agroupment for realizing work assignments

With respect to the type of agroupment, in Table 4 we see that, in 2010, 2014, and 2015 the online postgraduate students developed their assignments "frequently" in an individual format. The response options to the questions dealing with work agroupment, evaluation, activities, and materials utilized were: 1 = Never; 2 = Sometimes; and 3 = Frequently (see Table 1).

Table 4. Agroupment for the realization of work assignments, comparison of means, 2010-2015.

Agrupamiento para realizar tareas	Media 2010	Media 2014	Media 2015	F	Sig.
Individual	2.83	2.88	2.94	0.617	0.542
Pequeños grupos	1.47	2.00	1.34	5.545	0.005
Grupo clase	1.50	1.56	1.46	0.109	0.897

In comparing means for the three years studied (2010, 2014, and 2015), there is a significant difference in the work in small groups, in favor of 2014, with a significance of 0.005, obtained through one-factor ANOVA. This means in that particular year collaborative work was featured frequently (see Table 4). Although the results, when taken together, can suggest that in this modality, in this particular program, greater attention is given to individual work than to collaborative work. This result of agroupment to realize work assignments agrees with what has been reported by Arras, Valencia, and Tejedor (2014), who pointed out the prevalence of individual work in both online and presence-based postgraduate programs.

Type of activities, materials, and evaluation

In this space we examine the type of activities, materials, evaluation, and characteristics of the scenarios, which can be reproductive, professional, and critical or creative.

Type of activities

Table 5. Type of activities required of students, comparison of means, 2010-2015

Actividades requeridas a los alumnos	Media 2010	Media 2014	Media 2015	F	Sig.
Lectura	2.65	2.86	2.93	3.770	0.027
Reflexión	2.73	2.82	2.75	0.297	0.744
Análisis	2.97	2.82	2.85	1.828	0.166
Creación	2.84	2.36	2.38	6.833	0.002
Exposición online	1.68	1.59	1.55	0.068	0.934
Debates y foros de discusión	2.35	2.40	2.36	0.039	0.962
Estudios de caso	2.46	2.05	2.33	2.330	0.103
Resolución de problemas	2.43	2.32	2.23	0.814	0.446
Trabajo por proyectos	2.30	2.18	2.45	0.894	0.412
Tutoría individual	2.08	1.91	2.00	0.299	0.742
Tutoría en grupo	1.78	1.95	1.65	1.060	0.351

In Table 5 we can see significant differences in favor of 2010, as far as creation, both in the ANOVA proof (0.002) and in those of Welsh (0.000) and Brown-Forsythe (0.004). This result represents a regression insofar as the development of creative abilities, problem solving, and project design, among other things. In 2015 the reproductive scenario is prevalent and its differential is significant (0.027) in favor of that cycle. This scenario is characterized by the acquisition of information and contents proposed by the teacher, and the academic preparation the teacher realized (García and Arras, 2011). However, we should consider that analysis and reflection were valued positively.

The professional scenario related to the acquisition of professional competencies and the work that these imply rose in 2014 and went down again in 2015, although only moderately and without meaningful differences. The critical scenario, characterized by analysis of contents/topics studied and reflection on real cases diminished slightly from 2010 to 2015. It is important to point out the need for learning scenarios that are more critical and creative than reproductive, in order to foment meaningful and lifelong learning, given that from 2010 to 2015 the

creative aspect of learning scenarios descended with a resulting difference that meaningfully favors 2010.

In this area it is very important to consider that, in addition to works, case studies, reading, analysis, creation, and problem solving, it is necessary to reinforce group tutorials and online exposition, given that the valuations for these are quite low; in none of the periods do their valuations reach 2/3, while the individual tutorials do, on occasion, from the students' perspective.

Materials utilized

Table 6. Materials utilized in the online postgraduate program, comparison of means, 2010, 2014, and 2015

	Media 2010	Media 2014	Media 2015	F	Sig.
Programas	2.44	2.38	2.48	0.092	0.912
Apuntes, esquemas, presentaciones de contenido de la clase	2.54	2.71	2.62	0.428	0.653
Material online	2.79	2.71	2.76	0.156	0.856
Archivos de video, sonido, imagen	1.85	2.14	2.26	2.558	0.083
Material multimedia interactivo	1.74	2.10	1.95	1.301	0.277

With respect to materials utilized, that of interactive multimedia is the least frequent, and an appreciable increase can be seen between 2010 and 2015 in terms of video, sound, and image files, although this does not reflect a meaningful difference from the means in the valuation of the three periods studied. Also, programs, notes, and presentations are falling, and an exchange of online material shows up (see Table 6).

Evaluation

Table 7. Evaluation practices, comparison of means, 2010-2014-2015

	Media 2010	Media 2014	Media 2015	F	Sig.
Exámenes online	2.48	2.82	2.16	0.367	0.005
Ejercicios de autoevaluación	2.06	2.27	2.14	8.646	0.547
Entrega de trabajos	2.84	2.86	3.00	1.648	0.204
Participación de foros online y blogs	2.63	2.64	2.57	0.122	0.728

Evaluation practices were qualified differently in each cycle analyzed. Regarding online exams, in 2014 the grade is greater and it has a significant differential in its favor (0.005), while in 2015 the form of evaluating based on works received better marks, although the difference is not significant; also, there is a slight increase in the appreciation given to participation in online forums and blogs (see Table 7).

Teaching conditions

Teaching conditions are classified in two headings: one, of interaction and collaboration between students, and the attention given by the teachers; another, related to resources, content, and the relationship between evaluation, objectives, content, and classwork.

Interaction in the learning process

On interaction and resources in the learning process, the items were valued on a Likert scale, in which 5 signifies very adequate and 1 not at all adequate (see Table 1); thus, the results in Table 8 will be interpreted according to this scale.

Table 8. Interaction in the learning process

Interacción en el proceso de aprendizaje	Media 2010	Media 2014	Media 2015	F	Sig.
Atención personalizada del profesor	4.35	3.77	3.93	0.180	0.835
Nivel de interactividad entre profesor y alumno	3.20	3.73	3.71	2.021	0.138
Nivel de atención de los maestros	3.45	4.00	3.82	1.577	0.211
Nivel de interactividad entre los alumnos	3.05	3.68	3.60	2.115	0.126
Nivel de colaboración entre los alumnos	3.20	3.68	3.40	1.535	0.220

The educational process is itself a communicative act in which teachers and students interact, so that the attention and interaction between both is vital for achieving a meeting point in terms of the significance of the contents of learning. The results show that a decrease related to personalized attention from the professor from 2010 to 2014, with a slight rise in 2015, although the difference is not meaningful, and the students request more committed teachers (see Table 8). This concurs with what

has been suggested by some analysts, who assign importance to this factor (Flores, López, and Rodríguez, 2016).

In 2014 the results show an increase in the level of attention from teachers, which reaches a level of 4, which is good, although not optimal. Also, that same year, students perceived greater interactivity and collaboration between students; however, the difference, when ANOVA is applied, does not produce significant difference from the means of the analyzed groups.

It is worth mentioning that in 2015 the level of collaboration between students is the item that received the most points. The average of the valuations in interactivity with students is 3.44, uniting the three periods, and it is very similar to the grade of 3.42 assigned by the students to the use of collaborative tools to realize scholastic assignments and share information of interest, in the study carried out by Islas and Delgadillo (2016).

Similarly, from 2010 to 2014 personalized attention from the professor decreased, and in 2015 it went up, although it is still below the valuation it received in 2010. This could be related to the findings concerning the importance of the educator's work with the student, "...it is considered that students (3.67) expect motivation from the teacher to make connections between areas, concepts, ideas, and, afterwards, to establish linkages between the nodes created from the selection of information" (Islas and Delgadillo, 2016).

Resources, course content and its relationship with evaluation, objective, content and classwork

Table 9. Resources, content and relationship between the system of evaluation, objective, content, and classwork.

	Media 2010	Media 2014	Media 2015	F	Sig.
Recursos bibliográficos utilizados	3.97	4.23	4.13	0.376	0.687
Recursos informáticos disponibles	3.97	4.32	4.40	2.591	0.080
El contenido y los temas que conforman cada asignatura son	4.31	4.36	4.27	0.098	0.907
Cumplimiento del horario de asesorías por parte del profesor	3.25	3.73	3.58	1.038	0.358
Relación entre el sistema de evaluación y los objetivos-contenido-trabajos en clase	4.23	4.27	4.13	0.777	0.463

As far as computer and bibliographic resources are concerned, we observed a decrease in the mean in 2015 with respect to 2014, an aspect that requires some consideration, despite the difference in means not

being significant. However, its appearance holds special importance for processes of online teaching-learning (see Table 9).

Students considered course work contents to be "somewhat adequate," as they did the relationship between evaluation-objectives-content-classwork. It should be pointed out, however, that professors' compliance with announced consultation hours is the item that received the lowest ranking overall, and although it rose in 2014, it decreased slightly in 2015 and remained below where it was in 2010.

In expressing openly their opinion about their teachers, the students proposed significant suggestions for some of them:

- They need to respond to questions in a more opportune manner.
- Upload corrected work according to schedule.
- Give feedback in a timely way that they (the students) need to improve their activities.
- Be more committed to their work.

The grade given for the majority of the items was 4, which reflects areas of opportunity in each of the factors comprising this block. It is only in the topic related with the teacher that strategies need to be put into practice to achieve a considerable improvement, so that the teachers can concede the time, enthusiasm, and preparation of activities and thereby attain better quality in their work. This result concurs with the findings of Islas and Delgadillo (2016), who found that the feedback from the educators was not as high as had been hoped.

Satisfaction

Table 10. Satisfaction of students with the online postgraduate program of the Department of Accounting and Administration at the Autonomous University of Chihuahua.

Estoy satisfecho (a) con	Media 2010	Media 2014	Media 2015	F	Sig.
La maestría que estudio	3.68	4.15	4.54	8.315	0.000
La facultad	3.27	4.23	4.22	11.988	0.000
Las materias	4.20	4.38	4.49	1.108	0.335
La evaluación	3.12	3.77	4.22	13.007	0.000
La maestría ha cubierto mis expectativas	3.12	3.92	4.34	19.596	0.000

El campo laboral	3.73	3.23	3.68	0.631	0.534
El personal docente	3.12	3.15	3.49	1.092	0.340
La plataforma	2.78	2.85	3.10	0.611	0.545

In the aspects related to satisfaction of the students with the master's program they are studying, the department in which they are enrolled, the evaluation and the satisfaction of their expectations, there exist significant differences (of 0.000) in the means, according to the ANOVA proof, which reflects an increased interest on the part of the respondents regarding these issues (see Table 10). This undoubtedly represents an improvement in the programs that are being given. However, in aspects related to subject matter in general, the labor market, teaching staff, and platform, the means between the studied groups do not show significant differences. The course material was valued positively. The valuation of the labor field rose in 2015, although it was slightly below its 2010 level. The teaching staff valuations went from 3.12 to 3.49. This indicator requires some further attention, since the valuation was almost neutral; in fact, the students manifested the following: "In the case of some of the teachers, they need to improve and work more on developing innovative educational strategies, on applying ICT, and in the case of others I ask that they share with us educational material, like presentations and notes, complementary to the bibliography."

The results reflect the need, suggested by some researchers into online teaching, to visualize the professor as a facilitator of learning (Quintero and Hernández, 2011), whose attitude toward ICT and technological training is key for their work (Torres, Kiss, and Lagunes, 2015). From this perspective, they will have to motivate more collaborative study and work among students and, in this way, transit away from the "traditional" educational model and head towards the kind of connectivity that postmodern times demand.

As far as the valuation of the platform is concerned, it moved from 2.78 in 2010 to 3.10 in 2015, which indicates a neutral valuation, backed up by the following comments from students:

- Sometimes I have to battle with the platform.

- The platform is among the least advanced systems I have seen; it presents a lot of problems, it goes down, mails arrive late; there have already been three academic modules I have joined in on two or three weeks late, because I didn't receive information about anything.

CONCLUSIONS

The objective proposed at the beginning of this investigation was to do a comparative analysis of students' perceptions about learning scenarios in the online postgraduate programs of the FCA at UACH in 2010, 2014, and 2015. In principle, there had been differences in the student valuation according to the means obtained. In different aspects, we can affirm, advances were made in the 2015 collective; however, it is important to weigh the fact that the learning scenarios favor individual work and it is necessary to move toward collaboration (Paidacan, 2010) and connectivity among the actors in the educational theatre, as well as greater interaction among the actors involved in the educational process. The foregoing conclusion represents a challenge for the online modality of the FCA at UACH, both for teachers and students, in the sense of achieving a more participative education that responds to the theory of connectivity, in which knowledge is constructed on the basis of collaboration, discussion, and participative reflection (Islas and Delgadillo, 2016) by sharing and working with others (Gros and Noguera, 2013).

The intention is to construct networks of learning that allow for valuing the diversity of perspectives (Islas and Delgadillo, 2016) and finding support for the generation of a greater number of connections, mixtures, and restructurings of information (Cabero and Llorente, 2015) that can be strengthened with better use of interactive multimedia material and online expositions.

Similarly, the need is seen for increasing a more creative scenario, where students can develop their potential and generate designs (García and Arras, 2011). To the extent they are able to construct their own projects, they will obtain not only professional competence but also greater satisfaction.

There is also need for greater participation and commitment from teachers in the process of giving feedback, given that the satisfaction related to these actors is low, for the students, it is very important that "...communication with the teaching professional be ongoing, opportune, and respectful, based on personalized and warm messages that can orient them" (Flores, López, and Rodríguez, 2016, p. 36). On the same hand, educators ought to be motivated to utilize ICT (Copriady, 2014) and give impetus to the process of digital literacy (Cabero, 2014), as well as updating themselves on new theories of learning, to improve their practices in the educational process, to be able to generate networks of learning, and thereby to move toward professional and critical scenarios and away from reproductive ones.

From the perspective of the students, other aspects of improvement for the academic programs are related to the field of work, which requires analyzing what is sufficiently up-to-date and relevant. In addition, the satisfaction with the platform is valued in neutral terms, since the students

have difficulties accessing it, which reflects on the institution's commitment, as Flores, López, and Rodríguez (2016) have suggested, to have a computer and telecommunications infrastructure in optimum condition, with a capacity to offer uninterrupted, high-speed service.

In this way, the learning scenarios in the online postgraduate program of the FCA at UACH demand greater attention to the creative activities and interactivity among the actors involved, starting with more teamwork and feedback from the educators, as well as being opportune and improving the platform. The proposal is that the postgraduate program be configured as a space where the students construct meaningful educational apprenticeships, from a formative trajectory that implies knowledge, experimentation, feeling, creating, sharing, and learning how to learn through the construction of networks of knowledge.

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