Management leadership to promote distance education initiatives

Yessica Espinosa Díaz

Instituto de Investigaciones Sociales / Universidad Autónoma de Baja California

yespinosa@uabc.edu.mx

Claudia Araceli Figueroa Rochín

Facultad de Pedagogía e Innovación Educativa / Universidad Autónoma de Baja California

claudia_figueroa@uabc.edu.mx

Karla Lariza Parra Encinas

Facultad de Ciencias Humanas / Universidad Autónoma de Baja California

parra.karla@uabc.edu.mx

José Eduardo Perezchica Vega

Facultad de Pedagogía e Innovación Educativa / Universidad Autónoma de Baja California

eperezchica@uabc.edu.mx

Jesuan Adalberto Sepúlveda Rodríguez

Facultad de Pedagogía e Innovación Educativa / Universidad Autónoma de Baja California

jesuan@uabc.edu.mx

Abstract

Leadership is considered a critical success factor to drive innovations or changes in organizations. If we transfer this premise to educational institutions and to distance education models supported by information, communication and collaboration technologies, it is common to find that the central issues on which research has turned in, its had been focus on teaching, learning or in the technology itself, and little has been studied about the managerial leadership factor that influences these initiatives. The purpose of this article is to present the state of the art on leadership in distance education. A documentary research was carried out to retrieve, classify and select information from open and closed repositories, in databases and institutional websites. Among the findings, is worth mentioning the limited number of studies in Latin America, where it is associated the managerial leadership with the incorporation of technologies, while in Anglo-Saxon contexts an important attribution has been given to the success of these initiatives. Based

on the above, it is propose the need to conduct more studies that help to recognize the aspect of managerial leadership as a strategic action in promoting the use of technologies in education.

Introduction

The incorporation of ICCTs into the education sector has become relevant not only for the development of skills in the education of citizens, but also as a means to promote distance education solutions. However, in the context of public universities in Mexico, the incorporation of ICCTs has yet to be consolidated as a factor for the development of blended or distance learning models as an alternative to the traditional model, which can contribute to the achievement of expansion objectives regarding coverage, equality, significance and quality in education. The variety of narratives, visions and beliefs regarding the use and direction that should be taken by the initiatives associated to the use of ICCTs in traditional models have contributed to this situation, as well as to the diversification towards other modalities (blended or distance education), not only at an institutional level, but also at the level of government policies. Concerning institutional and government reports, the achievements are associated with the quantitative aspects in the use of technology, as well as with the investment in infrastructure, more than with the design of integral strategies aimed at solving educational matters (Rojas, 2014).

Under these circumstances, it is important to consider that when initiatives are developed for the incorporation of information, communication and collaboration technologies (ICCT) in the teaching-learning process in an educational institution, it is vital to have the presence of a defined vision that facilitates the strategic planning for the three main dimensions that jointly and simultaneously affect this process: technological, organizational, and educational. These dimensions comprise a socio-technological and educational context that aims to use technology effectively. In other words, when projects or initiatives are created for the incorporation of

ICCTs to use them in a strategic and meaningful manner, in a specific educational context (education level, regulatory framework, financing condition, organizational culture, etc.), it is equally important to consider the technological (platforms, applications and connectivity), educational (educational and institutional model, curriculum design, digital learning material) and organizational (organizational philosophy, structure and processes, normativity, leadership and financing) dimensions.

The fact that there is still a need to consolidate distance education can be due to many aspects. However, some of the ones that are less studied relate to the leadership capacity to promote the incorporation of ICCTs from a scope that thoroughly comprises the educational, technological and organizational dimensions. Consequently, in higher education institutions—which were originally formed around the traditional education method—four different manners for the generation of distance education initiatives have prevailed in the last ten years:

a) Teachers are interested in the use of technologies and they determine which ones to use, to what end, and how to use them in the teaching-learning process. This happens without the need to meet the institutional objectives, that is, it is a deliberate incorporation, but from the teacher perspective.

b) The institutions acquire technologies that make available to teachers and students, but without a plan that specifies the objectives or reasons for their use. In this case, the influence of the industry is more relevant than the clear identification of the reasons for the incorporation of technologies in the teaching-learning process. This manner of acquiring technologies for the institution proves to be more expensive and less profitable.

c) Although to a lesser extent, educational institutions carry out specific initiatives to offer comprehensive educational models for blended or distance education with the support of technology. However, these programs are generally limited in quantity and accessibility; that is, they are accessible only to a portion of the community of teachers and students from the institution and do not manage to fully benefit the community that participates in the traditional model; therefore, in terms of coverage, it entails a limited institutional reach.

d) With a higher complexity level than that achieved by very few HEIs, some institutions have consolidated a strategy wherein the traditional programs enter a diversification process so that students have learning experiences in different modalities within the same program (on-site, blended and distance). These programs have clear objectives for the fulfillment of a concrete need of the institution, which can be linked to one or several quality, coverage, relevance, or equality factors of the educational programs.

In any of the aforementioned ways to incorporate ICCTs, the managerial leadership factor is present at different development levels. It goes from virtually nonexistent to a level at which advanced skills are required not only to understand the value of technologies, but to learn how to mediate learning through them and the implications regarding organizational change in order to support these modalities.

Leadership as a factor that can influence a social organization where a person with certain skills can lead others towards a common objective has been developed as a subject in several related researches (Casto, Miquinela, Peley, 2006), particularly due to its close relation with the concept of change. Although there are certain studies in the organizational, educational and technological fields that have attempted to highlight the importance of leadership (Kotter, 1990; Maureira and Moforte and González, 2014; Rooke and Torbert, 2005; Zwaagstra, 1999; Mingaine, 2010), there is still a lack of documentation on the impact that leadership skills have on the promotion of technology initiatives at the managerial level of the educational organizations. Thus, it emerges as an opportunity to carry out studies to analyze which aspects of the leadership qualities could represent a factor that affects the promotion of distance education initiatives mediated by ICCTs in educational organizations.

Incorporation of ICCTs in education: international context.

In the last two decades, the use of information, communication and collaboration technologies in the teaching-learning process has been widely discussed in researches, government initiatives and projects, non-governmental organizations, and educational institutions (see table 1) where, in general, technologies are attributed the property of being a strategic factor used to improve

education—from the learning and teaching dimension—and, consequently, to promote the development and creation of better living conditions in societies (UNESCO, 2008, 2013, 2015; 21st Century information Fluency [TCIF], 2007; ISTE 2015; Economic Commission for Latin America and the Caribbean, 2010; Istance and Kools, 2013; Ramírez, 2006; Peña, 2013a; Carmeiro, Toscano and Díaz, 2009; López, Castro, Justo, Flores, 2015).

Table 1. ICCT and education: Initiatives, projects and researches.

Project/research/ initiative	Abstract	Scope
Project: ICT competence standards for teachers	Standards proposed by UNESCO to provide guidelines for teachers, specifically for the planning of educational experiences and training to prepare them for the formation of students with the use of ICCTs (UNESCO, 2008)	International
Project: ISTE Standards: Learning, teaching and leading in the digital age.	Project comprised by NASA, Apple Computer, and the Department of Education of the United States to establish performance standards for students, teachers, administrators, advisors and educators of computer science, in relation to the use and promotion of ICCTs (TCIF, 2007; ISTE 2015)	International
Research: Strategic approach on ICTs in education in Latin America and the Caribbean.	Proposal of ideas for the design of a new educational paradigm in which ICCTs serve as support both in the renovation of educational practices and in the strategies associated with the measurement of learning (UNESCO, 2013)	International
Project: OECD Work on Technology and Education: Innovative learning environments as an integrating framework [Innovative Learning Environments].	The Organization for Economic Cooperation and Development presents a collection of case studies in 19 systems (countries, regions or states) where technologies play an important role in the creation of innovative learning environments (Istance and Kools, 2013)	International: Ibero-America
Research: Information and communication technologies in education in four Latin American countries.	The results of the use of ICCTs in education in public institutions in Argentina, Costa Rica, Ecuador and Mexico, from 1998 to 2003, are presented, as well as subjects associated with infrastructure, financing, policies, manners of incorporation, projects and programs (Ramírez, 2006)	International: Latin America
Project: The challenges of ICTs for educational change.	Presentation of experiences and thoughts on the use of ICCTs in education and how "they must be taken into consideration so that they can contribute to the improvement of the quality and educational equality" (Carmeiro, Toscano, Díaz, 2009)	International: Ibero-America
Initiative: eLAC 2015 of the Economic Commission	Action Plan on the Information Society for Latin America and the Caribbean that presents ICTs as a	International / Latin America

for Latin America and the Caribbean (CEPAL for its acronym in Spanish)	tool for social development and inclusion. Regarding education, it presents the development and implementation of ICTs for an inclusive education as a guideline, while it prioritizes the universalization of access to ICTs as well as the expansion of their use in education (CEPAL, 2010)	
Initiative: National digital strategy, Educational transformation	Guide comprising the "actions and policies necessary to bring ICTs to the population. The objective is to incorporate these technologies to the daily life of people, companies and the government" (Peña, 2013)	National
Research: Distance education in the context of Baja California.	"Study on the feasibility of distance education programs for higher education in the state" (López, Castro, Justo, Flores, 2015) of Baja California, Mexico	Regional

Source. Own elaboration.

In the case of Latin American countries (e.g., Brazil, Colombia, Costa Rica, Chile, Mexico), these efforts have lain the foundation to create favorable conditions for HEIs to begin educational innovation processes with the support of ICCTs, be it as assistance to their traditional models or by developing initiatives for distance education. Undeniably, there are results that show that technology has been acknowledged as a strategic factor, and initiatives have been designed to elevate the level of adoption of the same by teachers and students (see table 2).

Table 2. ICCT and education: Education virtualization experiences.

Author/year	Country	Result
Carmona and Rodríguez (2009)	Colombia	70% of seven universities that represented Colombia have strategic plans for the incorporation of ICCTs: Universidad Nacional de Colombia, Universidad de los Andes, Universidad Autónoma de Bucaramanga, Universidad del Norte, Universidad de Cauca, Pontificia Universidad Javeriana and Universidad Industrial de Santander.
Computing Center of the Universidad de Costa Rica (2007)	Costa Rica	In 2005, the four public universities (Universidad de Costa Rica, Universidad Nacional Autónoma, Universidad Estatal a Distancia (UNED) and the Costa Rica Institute of Technology) created an action plan to work in the modernization of the institutions with the integration of ICTs in the university endeavors.
Farcas and Reininger (2010)	Chile	The Universidad de Artes, Ciencias y Comunicación is one of the most emblematic cases of Chile, as it adopted ICCTs to strengthen its traditional educational programs, in addition to being the first to offer a distance undergraduate program. Today it offers distance

		undergraduate and graduate programs.
Rama (2014)	Mexico	The Tecnológico de Monterrey (private university) is a leader in Mexico in the development of ICT incorporation initiatives in the field of education, and one of the universities with the widest reach at an international level with distance education programs. The Universidad de Guadalajara, Virtual University System (public university), has been a leader among public institutions due to the development and influence it has on the direction of distance education in the country.
Cano (2012)	Panama	The Universidad Tecnológica de Panamá, Florida State University, Universidad Especializada de las Américas, Universidad Latina de Panamá and Universidad Latinoamericana de Ciencia y Tecnología have incorporated virtual university models. The Universidad de Panamá and Universidad Tecnológica de Panamá have developed collaboration agreements with international organizations such as Virtual Educa, Organization of Ibero-American States for Education, Unesco, among others, to develop education programs offered worldwide to teachers for the development of digital competencies.

Source. Own elaboration.

However, results are still limited in the public higher education institutions. This is mainly attributed to the level of adoption of ICCTs by teachers, the lack of solid public policies, as well as factors like infrastructure and technology access (Carmona and Rodríguez, 2009; Farcas and Reininger, 2010; Cano, 2012; Rama, 2014).

Incorporation of ICCTs in education: national context

If the last two federal administrations[1] in Mexico are taken as a benchmark, we can observe a marginal progress in the use of ICCTs in support of matters such as coverage, quality, relevance and equality in higher education. The main resources were allocated to the development of distance education initiatives in universities with traditional models in order to diversify them; to the provision of equipment and connectivity conditions; to the access to the internet; and to create solutions in the form virtual universities, such as the Universidad Abierta y a Distancia de México.

During the administration of president Felipe Calderón Hinojosa (2007-2012), around 77.8 million pesos were allocated to state public universities for projects that would promote the

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[1] The sixty-first legislature during the presidency of Felipe Calderón Hinojosa (2006-2012) and sixty-second legislature during the administration of Enrique Peña Nieto (2013-2018), more information can be found in Annex B.

blended and distance modalities with the support of ICTs. In 2012, it was reported that 389,725 students were assisted which, when compared to the 166,740 students assisted in 2008, meant an increase of 133.7% in the coverage. Despite these results, it was estimated in the sixth federal government report that a coverage of 30.9% was achieved in higher education, where 25.8% was achieved in the formal school modality, and around 5% in the distance modality with the support of ICCTs (Calderon, 2012; Secretariat of Public Education, 2013). It is worth noting that these results do not assess the impact in quality, equality, or relevance.

Concerning the administration of president Enrique Peña Nieto, three lines of action are established in the planning of the 2013-2018 National Development Plan for the incorporation strategy of ICCTs in the teaching-learning processes:

- To develop a national policy of educational information focused on the student development of their skills on how to learn using information and communication technologies.

- To expand the provision of computer equipment and guarantee connectivity in the educational facilities.

- To intensify the use of technologic innovation tools at all levels of the Education System (Peña, 2012).

These lines of action must be strengthened with the intended promotion to the appropriation of ICCTs by Mexican citizens, departing from the reform decree for the Political Constitution of the United Mexican States in Telecommunications and Economic Competition where, among other things, it is established that the State is obligated to guarantee the right to access ICCTs. The National Digital Strategy document was created in order to make this initiative possible. This document contains a guide of actions and policies that will give the general population access to ICCTs, to use them daily and in business and governmental environments.

These are interesting initiatives, however, the impact they have had at a national level has been limited to: the promotion of the SEP@aprender platform, which provides technological services regarding virtual classrooms and social networks, the promotion of the Universidad Abierta y a Distancia de México (UNADM), and the financing of a small number of public universities to

strengthen the provision of equipment through the Education Quality Consolidation Program, formerly known as PIFI (Peña, 2013b). Furthermore, actions were taken in 2014 for the use of ICCTs in higher education as tools to create favorable conditions for indigenous communities. This was done through distance education programs created through a project between the Universidad Abierta y a Distancia de México, in collaboration with the Universidad Intercultural de Chiapas and the Universidad Autónoma de San Luis Potosí (Peña, 2014, p.278).

Additionally, continuous distance education was promoted through the UNADM with the offer of massive online open courses, available to any person through the *MéxicoX* educational platform. Regarding the incorporation of ICCTs between this subsystem of technological education, an offer of 10 distance educational programs was reported in 2014. Among these programs, three of them (Computer Engineering, Business Management Engineering and Industrial Engineering) have the total digital education resources available online, whereas there is a 60% progress for the rest of the programs (Peña, 2015). Moreover, the generation of a strategy for the implementation of massive open courses through the MéxicoX platform to offer nine online courses related to the 43 study plans stands out. Similarly, the pilot project offering the linear algebra course has already begun (Peña, 2015).

On the other hand, Edel (2012), a researcher from the Universidad Veracruzana, carried out a state of knowledge study on "Virtual learning environments" during the 2002-2011 period, in which he analyzed 409 research articles published in a database, 104 theses and 169 presentations about distance, online, or virtual education. In his results he highlights that Mexico, Spain, the United States, Turkey, Colombia and Venezuela contributed with 60% of the productivity in the analysis period.

Regarding the theses, he notes that, from the Spanish-speaking Latin American countries, Mexico and Chile have the greatest production. Another relevant result is that from the 169 presentations that were analyzed from the events carried out in 2007, 2009 and 2011 by the National Congress of Educational Research (CNIE for its acronym in Spanish), and the Mexican Council of Educational Research (COMIE for its acronym in Spanish), the majority of the publications are focused on pedagogical and technological subjects, while the production of

research experiences in the organizational dimension is marginal and leadership is not mentioned (Edel, 2012).

Up to this point the data shows the aspects that are addressed the most by the administration, that is, the ones more invested in, mainly regarding equipment or technological aspects and coverage data. However, little detail is provided regarding the results of terminal efficiency in these programs, or concerning their quality, or how the subjects of equality or relevance are addressed based on these aids provided to educational institutions.

The foregoing is consistent with the conclusions made in several researches, where the fact that we still have a long way to go regarding the better use of ICCTs as a tool to support the teaching-learning processes is highlighted (Ramírez, 2006; Torres, Barona and García, 2010; Edel, 2012). The most frequent initiatives regarding the incorporation of ICCTs are more related to the acquisition of equipment than to the adoption results from the educational dimension. This is the case at the national, state and institutional levels (Ramírez, 2006; McAnally-Salas and Sandoval, 2007; Torres, Barona and García, 2010).

The incorporation of ICCTs in education and managerial leadership

McPherson and Baptista (2006) argue that, even when research has been done regarding the key factors to be considered in the introduction of technologies (Volery and Lord, 2000; Soong et al., 2001; Testa and de Freitas, 2003, cited in McPherson and Baptista, 2006), the majority revolve around the technological aspects of the design and distribution of contents, with very few researchers having discussed the organizational and institutional aspects (López, 2007; Cuban, 2001; Leonard and Leonard, 2006; Padrón, Waxman, Lee, Lin and Michko, 2012; cited in Waxman, Boriack, Lee and Macneil, 2013).

Among the limiting factors that have been studied the most are those related to the appropriation of ICCTs by teachers. Some documents emerge from this situation, such as the one elaborated by the United Nations Educational, Scientific and Cultural Organization (UNESCO): *UNESCO ICT competency framework for teachers*, which contains a proposal focused on the training of teachers in areas associated to technological literacy, as well as on topics concerning the depth and creation capacity of knowledge (UNESCO, 2011). The objective is to create a reference

framework that is useful to teachers in the effective use of ICCTs, in addition to guiding the directors of educational organizations towards the development of lines of education or strategies for the incorporation of technologies in educational processes.

Nevertheless, it is until this last decade that an in-depth analysis has been done regarding the role of directors in the incorporation of technologies in educational organizations, where their activity has been explored from the perspectives of leadership, their own digital competencies, and their capacity for process management (Chen, 2013; Waxman et al., 2013; Holt, Palmer, Gosper, Sankey and Allan, 2014). Some studies indicate that the lack of administrative support has a negative influence on the adoption and implementation of technologies in the educational organizations and that, conversely, a favorable behavior towards technologies, leadership and an advanced level of digital competencies on behalf of the directors positively affects the integration of ICCTs (Ritchie, 1996; Sharrat, 1999; Atkins and Vasu, 2000, cited in Waxman et al., 2013).

Additionally, it is considered that within this leadership factor and the favorable attitude towards ICCTs, an important factor that allows the integration of technologies is associated to the capacity of directors to support the pedagogical development of teachers, the provision of consultancy regarding the use of technologies, and the access to the respective infrastructure and equipment (Petersen, 2014). Dexter (2008, cited in Petersen, 2014) argues that the school leaders that guide these initiatives must be knowledgeable about ICCTs and, at the same time, possess the capacity to organize the activities of the educational organization. Three basic characteristics that distinguish this type of leader stand out: they can articulate a vision and a goal; they help teachers develop professionally, and they organize activities to ensure they happen.

Just as there are studies that analyze the influence of leadership on the development of technology incorporation projects to promote distance education, there are also organizations that have been making a great effort to provide tools that help educational institutions identify the ideal profiles for those that direct these projects. An interesting case is the work of the International Society for Technology in Education (2011), which has helped promote standards based on performance indicators and the profiles of teachers, students, personal trainers and, even more relevant, administrators, deans and superintendents in educational institutions.

Basically, this organization establishes five performance standards that must be fulfilled by people in administrative positions related to the incorporation of ICCTs in the teaching-learning process: visionary leadership, learning culture in the digital era, excellence in their professional performance, systematic improvement and digital citizenship. These standards, in turn, have indicators that make it possible to observe performance, in addition to being useful to establish whether the necessary profile is there, or to identify the aspects that must be improved. The aforementioned five standards are described in the following section.

Concerning this performance standards proposal, Billheimer (2007) carried out a study with the directors of Marshall University, in West Virginia, related to the technological standards, professional development and institutional efficiency of the technological leaders. The objective of the study was to explore the perception of directors concerning the national educational technology standards for administrators, NETS-A [2], and their interest in professional development based on these performance standards, in addition to describing the implementation of the NETS-A in the West Virginia University by the directors, identified as effective leaders in the implementation of technology.

Three aspects stand out among the findings of this research. The first is related to the relevance standard of the ICCTs in the teaching-learning process, wherein, though most directors consider it of high importance, it is also acknowledged that they do not have the necessary leadership skills to effectively use ICCTs in these processes. Secondly, it is recognized that professional development is vital for the development of leadership skills and their willingness to continue working in this regard is evidenced. However, as a third finding, which is associated to how prepared they are in the institution to develop ICCT incorporation initiatives in educational processes, it was recorded that even when there is an interest and willingness to work, one of the faults is that they have not had enough training to develop leadership skills. At the time this research was concluded, one of the most relevant conditions was that the directors evaluated the standards of leadership and vision with low indexes, and therefore these aspects are proposed as areas where a more in-depth analysis should be performed in future researches.

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[2] National Educational Technology Standards for Administrators (NETS-A) is the first version of the standards of the Society for Technology in Education (ISTE) related to administrative positions

In another doctoral thesis developed in the University of Virginia, Duncan (2011) conducted a research to evaluate the managerial leadership in this university. The objective of the study was to collect data on the commitment and the participation of directors in technology projects to analyze their performance and propose modifications in the school district practices concerning the areas of personal development, administrative certification, and training programs for directors. The main finding reinforced the recommendation of the aforementioned research, given that the managers evaluated the standards related to leadership and vision, associated with the most recent events in the planning of ICCT incorporation, at the lowest level.

The third doctoral thesis presents the results on the relation between technological leadership, organizational atmosphere, and the integration of technologies in public basic education institutions (Watts, 2010). Its objective was to determine the existence of correlation between technological leadership and the school environment for the integration of technologies by the teachers in public institutions, referred to as K-12 in the United States. The most prominent finding indicates that directors acknowledge their roles as technological leaders, but the majority of them lack a clear understanding on how to promote change to make technology something of significance in the teaching-learning process.

Based on these three studies, and regarding their approach and methodology, we can argue that in all cases an adaptation of the NETS-A was done, with a direct relation to the indicators, without any distinction made on the development stage concerning the incorporation of ICCTs. This means that the standards were applied without knowing whether the institution was at an initial, intermediate or advanced stage in this incorporation, which could entail a different level of leadership skills for the directors. Furthermore, the three researches had the directors as main informants through self-assessment processes, which could imply a bias in information regarding the real leadership capacity they have to conduct the incorporation initiatives of ICCTs. Although in two of the aforementioned studies other teachers were also used as informants, the leadership capacity observed in their directors was not directly evaluated.

Discussion and conclusions

The Indicative Program for the Development of Distance Higher Education (PIDESAD for its acronym in Spanish) 2024 was recently presented. This program is the result of the interdepartmental work of universities with experience in distance education and organizations such as the National Association of Universities and Higher Education Institutions, and the National Distance Education System. The program acknowledges the lack of a national policy to support the development of this modality, which has caused the dispersion of solutions and efforts, as has been documented in the previous sections. The aim of this program is to guide the work done in terms of the promotion of distance education initiatives, with a special emphasis on "Increasing coverage with equality, relevance and social responsibility, and improve the quality of the Higher Education System to elevate the social and financial development of Mexico" (ANUIES, 2017, p. 91). Even in this program, any kind of diagnosis, strategy, or action line related to managerial leadership to understand and promote distance education initiatives can be observed. The relevance of this note lies on the fact that if no support is given to the promotion of this modality, we will hardly see an improvement in education coverage matters.

On the other hand, it is important to note that the consultation of studies and documented results of the experiences in educational institutions to which there is access in open repositories are mostly from Anglo-Saxon contexts. Little can be found on this subject in Latin American contexts (Aguerrondo and Vezub, 2011 cited in Bernal and Ibarrola, 2015), which opens up an interesting opportunity to develop studies in our region concerning the impact of leadership, specifically in matters of ICCT incorporation initiatives in the teaching-learning processes in order to generate proposals for instruments that will help educational institutions implement distance education initiatives where the existing resources and capacities of the organization are used.

Finally, it is convenient to observe how the matters of organizational culture and learning, or the leadership capacity of directors have been neglected or have not been addressed more thoroughly. These are key elements in the change and innovation process. It is assumed that we have directors that are prepared to undertake the leadership position required to influence others to voluntarily contribute to the achievement of goals in a group in such a situation, all in order to

carry out the effective incorporation of ICCTs, when in fact, the development of distance education in Mexico has yet to be consolidated.

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