The knowledge transfer in educative institutions: a local study

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Abstract

The present research analyzes the management of the knowledge with regard to its transfer in an educational institution located in Medellin, Colombia. A mixed research approach was used by conducting survey to 25 teachers, in order to measure the knowledge transfer made after taking a training course and conducting depth interviews with three managers. The dimensions of the knowledge transfer questionnaire with the highest grades, were those concerning to the design of the transfer process, and the opportunities to apply the knowledge, rated with a 4.1. In the other hand, the dimension averaged with the lowest grade, was the ability to transfer, with a score of 2.7. The findings obtained, have implications regarding the management of knowledge to achieve the intangible resource they have and to begin the construction of collective knowledge within educational institutions, going from the information transmission to the transfer, as well as to the knowledge construction.

Keywords: knowledge management, knowledge transfer, educational institutions

1. Introduction

Currently, knowledge has positioned itself as an intangible resource of the organizations, thanks to the economic dynamics, new technologies and globalization. The age of knowledge brings knowledge management delimitated by the organizational dynamics, the knowledge transfer and experience of the organization´s members. Knowledge management focuses primarily on organizations that see the need to accelerate information flows and produce added value for the organization and its clients [1]. The management consists in optimizing the creation of the conditions necessary for knowledge flows circulate better. Arises as a management practice of tangible assets (physical and financial) and intangible assets (knowledge as a competitive advantage). What is executed is the creation and transfer of the practice of this knowledge [2].

It is evident the need to project and extend knowledge management at educational institutions, incorporating the theme in strategic planning to enhance the knowledge of the staff at all levels and make it serve to the institution. This could happen if design and planning processes that value the human potential aimed to improve significantly and steadily, the quality of educational processes and products are used.

The present investigation has the purpose of evaluating the status of the knowledge transfer in an educational institution, also by analyzing the position of managers on knowledge management practices used. In an initial part of the text, we seek to define more recent theoretical trends in knowledge management and propose a conceptual framework idea, which will guide the research process. The methodology of data processing was carried out using a mixed transactional approach using SPSS as a tool for data processing; in addition it presents the results by size as well as the perception of managers on the management in general.

In short, the interest in the study of management and knowledge transfer has emerged in recent years due to the implementation of quality management systems, and the business need for continuous improvement of personnel, talent retention and storage information: a trend that ensures the achievement of corporative objectives.

2. Origin and Definition of the Knowledge

The economic dynamics, new technologies and globalization have taken knowledge to a place, it did not have before. Concepts such as "Information Society", "Knowledge Society", and "Knowledge Economy" are mentioned in many different occasions in academic environments; the first two concepts were born in a theoretical debate in the late 1990´s, in the Geneva world summit in 2003 and in Tunisia in 2005, here they were used to explain the changes society is experimenting due to the incorporation of the information technologies. The knowledge economy acquired a protagonist role in the social, cultural, politics and business systems in all countries during a process where people become aware of its importance. Nowadays knowledge is considered as an in-

tangible resource for organizations; therefore, it generates a worry about how to manage it [3].

Knowledge management is mainly focus on the business organizations that see the need to accelerate the information flows, from the individuals to the organizations to the individuals again, in order to produce an added value to the knowledge production for the organizations and their clients [1]. In this context, knowledge management consists in optimizing the creation of the necessary conditions for the better circulation of the knowledge flows [2]. This does not mean that the knowledge is administrated as such, but the knowledge generation, storage, distribution, use and generalization cycles are managed; in other words, what you manage is the creation and transfer of the knowledge.

2.1. Origin of knowledge management

Peter Drucker, first used the term "knowledge worker" in 1970. His contributions pose reflections on the knowledge society, the management of organizations and information systems in a historical moment characterized by the entry of multinationals; which cross borders and spread throughout the world showing a form of a more advanced economy. During the eighties, we witness the beginning of the implementations of initiatives to improve the quality, such as Total Quality Management (TQM, developed by the Japanese), Business Process Reengineering (BPR, business management strategy focused on the analysis and design of workflows, and processes within an organization) and Six Sigma (process improvement methodology aimed to eliminate failures in the delivery of a product or customer service). At the beginning of the nineties, people start using the term "knowledge management", (KM-GC); the first companies to use it, were companies dedicated to offer services, these organizations based businesses on knowledge and experience of its employees. In KM-GC, knowledge is an asset and constitutes the social-productive cycle in the knowledge economy [1].

In the educational field, knowledge management is just beginning its appearance. Organizations applying KM-GC are hardly ever found in education, something that draws attention since education is the central place where the development and transmission of knowledge that shape our societies occur [4].

The previous historical-theoretical tour sets the context of knowledge management as a step forward from the industrialization age and tangible resources, to the information society and knowledge management. There is where the need to deepen into the generation and transfer of knowledge is born, subject that several authors have already worked with, giving us an extensive documentation. However, the educational field has just begun his foray into this new social dynamic that requires postmodernism, hence making it difficult to recover literature on knowledge management in education; task that generates the importance of the present.

2.2. Defining knowledge transfer

Knowledge transfer is part of the knowledge management process and it is understood as the one which is communicated from one agent to another. The human being has always taken actions to transfer knowledge; in the industrialization age despite not managing knowledge transfer, employees conducted informal transfers, from a source of knowledge to another, called the receiver, who was interested in knowledge so he could perform an effective work. Knowledge transfer was done without the backing up of a written support, and those who knew something, in most cases, were not aware of their knowledge. The knowledge passed from face to face, from a teacher to his apprentice [5]. Nowadays, the transfer remains a constant in organizations.

Since the Theory of Communication, the transfer is understood as a communicative act or knowledge flow between a sender and a receiver within a specific context. Knowledge transfer is a process in which through knowledge, information or experience, go to various internal or external agents of the organization [6] [7] [8] [9]. The knowledge transfer may involve transformation, making it more explicit, codified or easily to communicate between different agents (the whole enterprise, a group of professionals or other group) [10] [11]. Furthermore, these authors, proposes the term tactic knowledge as highly personal, difficult to identify and characterized by their transfer uncertainty

Once we enter in a dialogue with aspects that characterize the transfer of knowledge. Alfageme, Saez and Lopez [12] in his research on this subject, based their theoretical analysis model on variables such as: codability (degree in which the knowledge can be expressed in written form), dependence (supported by people with experience in certain knowledge) and causal ambiguity (difficulty identifying knowledge), as they are crucial for communication, education and knowledge connection.

Libraryhouse [13] in the context of European universities, considers the knowledge transfer as the process by which experience and intellectual assets are applied for the benefit of the economy and society through partnerships with industry, the state and communities.

2.3. Mechanisms used for the transfer of knowledge

After seeing the conceptualization made in the preceding paragraphs, we will mention some activities or mechanisms for knowledge transfer found in literature, that at the same time enable to understand in a more tangible way the variables in question.

Libraryhouse [13] enunciates knowledge transfer mechanisms such as:

-Continuing Professional Development: Training programs with certification options, for professionals looking to expand their knowledge and develop competences for professional practice.

-Consulting: providing expert advice to clients in order to generate new ways of understanding reality.

- Licensing: is a formal agreement that allows the transfer of technology between two parties, one of which shares its rights to it so that the other party can use it.

- Collaborative research: structured research projects involving in addition of universities, two or more actors, which work together pointing to a target.

- Networks: a social structure in which several actors, individual or organizational, are interdependent, share ideas, values, knowledge, technology, financial exchanges or friend.

Acevedo, Gonzalez, Zamudio, Abello, Camacho, Gutiérrez, Barreto, Ochoa, Torres Quintero and Baeza [14] also talk about the previously mentioned mechanism of knowledge transfer, although named differently (training, technical assistance, sale, gift or development of licenses of technological products; joint research) and add the products or spreading processes composed by academic community publications, booklets, magnetic media, academic events or media spreading activities.

Gouza [15], in his investigation of the determinants of knowledge transfer within the Spin - offs university (technology transfer through an organization), examines five factors that influence the transfer, extracted from the literature based on his work: the source, knowledge attributes, the receiver, the organizational context and the media.

The source or sender, posses the message and as he is the most important agent in the transfer, his motivation to share and ability to transfer are essential factors for the recipient understanding [16]. It can also occur that whoever possesses the knowledge sharing resist, for fear of losing their property, position, privilege, superiority or lack of time and resources available [17]. The credibility of the source is essential for the receiver and determines the judgment and the level of appropriation that is made of the information received [18].

Knowledge attributes such as coding, complexity and tactic character conditioned the transfer. Coding is the process by which knowledge is represented in a code that can be transferred [19]. Tacit knowledge can only be observed through application, it cannot be easily encoded but is acquired through practice. A part of it is in the people and another is inserted in the organization [20]. Knowledge is difficult to understand and can be assimilated over time, it is the essence of work teams, organizational routines and culture of the company.

The complexity of knowledge occurs when a large number of skills and interdependent assets. The greater the complexity of knowledge transfer, the more difficult it will be [21]. There is talk about the causal ambiguity, or knowledge problem, for the company when the new knowledge features are not well understood, when it is being used; ambiguity in the causes that lead to have a competitive advantage which protects the company from imitation [22].

Regarding the receiver, motivation, absorption capacity and the teachability ability are essential and allow the achievement of a successful transfer. Szulanski [9] states that when a receiver is not motivated, he looks passive, indecisive, slow, lacking in will and manifesting rejection towards the new knowledge. Teachability is defined as the ease in which new knowledge can be taught [7]. The absorption capacity is defined as the acquisition, assimilation and exploitation of knowledge in the generation of new ideas [22].

The organizational context involves aspects such as trust, geographical and organizational distance. Confidence enables seamless knowledge transfer, the proximity between the sender and receiver; Davenport and Prusak [18] mentioned that the trust provides security on what is expected in the future and this increases the willingness to achieve knowledge sharing. Geographical distance allows to establish a lager number of personal contacts, and the organizational distance refers to the similar culture held by members of a company, in comparison to the organizational culture.

The media to conduct knowledge transfer involves the use of methods, such as face to face communication and the use of technological tools (ICT). The face to face communication enables the transfer of tacit knowledge through less formal processes such as personal training, personal conversations or work teams; as that knowledge has a low encoding level and requires interaction and experimentation to ensure transfer. Technologic tools permit better speed at lower cost in the information transfer process.

When we study the mechanisms and factors influencing knowledge transfer, it is possible to contextualize the scenarios in which there is knowledge transfer; one of them brings continuous training programs. In these, the organization has a formal space privileged for knowledge transfer, trying to bring the novice, the companies` tacit knowledge closer, or look for external solutions to internal organizational problems, which requires a training transfer to the labor field.

2.4. Studies on knowledge transfer

Zapata and Pineda [5] conducted a case study on knowledge management and transfer in small business which used information technologies; thru an exploratory study, they chose to identify the elements that facilitate or hinder the generation and transfer of knowledge through semi-structured interviews, direct observation and document analysis. The results gave categories such as: external knowledge acquisition, important elements of knowledge generation, formal mechanisms of knowledge transfer, unusual mechanisms of knowledge transfer, mechanisms supported by technology in the knowledge transfer and another category which referred to the important elements in the knowledge transfer.

In the previous study, regarding the knowledge transfer, they found, among other conclusions, that formal in-

person mechanisms have more impact, but companies have little time to document their processes and reduce the effort duplication. Meetings are the privileged means for knowledge transfer, and informal mechanisms (face to face) are more used than formal.

Moreno, Quesada and Pineda [23] carried out a study about "working groups" as an innovative method of training teachers to enhance the learning transfer in kindergarten, primary and secondary teachers. The research was focused on Pineda`s evaluation model referred to satisfaction, learning, teaching education and transfer; covering training activities such as courses, seminars and working groups. They used instruments to collect quantitative information (questionnaires).

Among the results found, the authors state that the working groups mainly have targeted aspects related with innovation in the classroom, improvement working environment, research on topics of interest and improvement of the school organization. These goals are positively affected by factors such as motivation, involvement and participation of members. Another conclusion extracted from the perception of teachers refers to the low application of learning in the workplace, but a high incidence in the participants` personal development. Within the resulting factors affecting the learning transfer were found: the existence of a positive climate in the school, the motivation for the application in the classroom and the success expectations of the working group.

All of the previous references teach the interest in the training evaluation and other mechanisms related to knowledge transfer in enterprises of different economic sectors; in the educational field, although the impact of the transfer has not been studied a lot, it is a constant due to the formative nature of the sector; however, it is necessary to establish a plan for the transfer and evaluation of knowledge so it can ensure the efforts assessment of both, directives and employees.

2.5. Knowledge transfer and application of learning to everyday educational work

The knowledge society, globalization, new information technologies and new communication technologies require learning to be shared between different economic, political, social and cultural developing sectors. Knowledge in enterprises becomes a resource which generates competitiveness and distinctiveness in the market; however, in the context of this research, although in the educational field there are ways of competition (more in the private sector than in the public sector), the greatest interest is to achieve knowledge transfer in the educational enterprises, so they can ensure the implementation in the workplace of what is learnt, and thereby achieve educational progress at the institutional, regional, national and world levels.

Two institutional situations motivate this research. The first refers to the constant movement of highly experienced personnel caused by retirement and entry of new staff each year (that replace the newly retirement workers). The second talks about the implementation of the strategy "Quality Schools"; which seeks that institutions certified by quality processes can support some public schools, in order for them to improve the quality of the city's education. This is the reason why we will discuss some aspects of learning, training transfer, some alternatives for measurement within the enterprises and barriers in knowledge transfer, processes required for the reality described above.

Part of the knowledge management focuses on training and how it can transfer organization knowledge thanks to it; Mitnik, Coria & Garcia [24] state that the training effectiveness is achieved if the competences (previously provided by the trainer) are transferred to the trainee. The transfer is achieved if the competences are transferred to the workplace. The following chart shows some indicators measuring training activities in line with the training quality, ensuring many variables that lead to the subsequent learning transfer.

To ensure training transfer and as a consequence knowledge in the company, it is important to understand the learning process which happens during training.

According to the results obtained by the Development Committee of the Science Learning, of the United States Sciences Academy, the transfer increases if we take into account, for the initial learning, factors such as working for the compression (not for memorization), allowing the socialization of the tactic knowledge, respecting the time availability that reacquires each person as he learns, assisting meta-cognition, showing the kindness of what is being transferred, maintaining motivation through the correlation of the usability of what is learnt.

Intelligence and the usefulness of the learning perception are individual characteristics that influence the transfer; others such as change resistance and reactive behaviors to previous work situations can have a negative effect towards the transfer achievement. The training characteristics influence the transfer success; this aspect includes factors such as the diagnosis of training needs, formative design, the fit between course objectives, the participant's expectations, the instructor credibility and the learning context.

Organizational characteristics influence the transfer of favorable elements, such as head commitment, supporting transfer planning and peer support; and favorable and unfavorable elements among which the interval between training and implementation, available resources, the state of the psychological contract and psychological security, management style, application opportunities are found.

Finally, an organization which desires to manage knowledge transfer, the knowledge transfer arising through training processes must ensure project preparation, implementation, maintenance and transfer of skills acquired during the training. The questions mentioned in the following section are derived from this case.

3. Problem Proposal

3.1. Research Question

What is the status of the knowledge transfer in an entry level private school institution in Medellin, Colombia?

Objectives

General objective

To evaluate the status of the training transfer and other knowledge transfer mechanisms in the educational institution.

Specific objectives

- To measure the knowledge transfer through the evaluation of the transfer or application of the workplace training.
- To identify the knowledge transfer mechanisms which occur in the institution.
- To develop proposals for improvement for the school benefit with respect to the results found in the research.

Justification

The history of humanity has been determined by the development of the economic processes of every age and characteristics of the economy have shaped the perception that men have developed regarding the concepts of work and business. Marx (Quoted by García, 1994) [25] expressed, in the mid-nineteenth century, that the company is a member of a exploiter production mode, called capitalism. Currently, in the twenty-first century, in the organizations people is discussing about management models: human talent, knowledge and skills management; all of these models overturn a special interest in training, formation and human capital development as an essential element of competitiveness on the market [26].

The present study was carried out in a private educational institution in the city of Medellin - Colombia, which, after being certified by the ISO, it needs to continue improving its processes. After ten years of touring the certification process and experience the elements of the Quality Management System, it is necessary to study whether the trend of management is current and responsive to the social challenges, the teachers' needs and the students´ requirements.

4. Methodology

We used a mixed research approach (qualitative and quantitative) to meet the investigation objectives and the problem setting of the status of knowledge transfer as part of the knowledge management model in an educational institution. We chose to collect, analyze and link quantitative and qualitative data in a single case study. We select-

ed a non-experimental design, but transactional whose purpose was to determine the status of the knowledge transfer at a given moment in time [27]. The knowledge transfer, topic of the present investigation, was studied through the application of a semi-structured interview, designed basing it on the theory obtained in the theoretical framework and the Swanson and Holton´s instrument [28] on learning transfer and training; consisting of 38 reagents on a five-point Likert scale, which assesses 10 dimensions: ability to transfer, resources, peer support, resistance to change, content validity, feedback, compensation, development of the organization, and design opportunities for transfer.

The case study was carried out in a private educational institution in the city of Medellin, Colombia, which has about 30 people in administrative positions, 280 teachers and 2000 students. The sample was for convenience. It was formed by 25 teachers of different educational levels in various areas of knowledge and varied age.

5. Results

5.1. Descriptive statistics training transfer

The following Table exhibits the results of the questionnaire about training transfer, showing for each dimension the mean, minimum, maximum and standard deviation obtained with the results collected.

Table 1. Descriptive statistics of the results from the transfer of the training

	Range	Minimum	Maximum	Mean	Deviation	Variance
Design to transfer	2,0	3,0	5,0	4,140	,6377	,407
Opportunities	2,0	3,0	5,0	4,107	,6215	,386
Organization Development	2,0	3,0	5,0	4,093	,6200	,384
compensation	2,8	2,2	5,0	3,900	,7087	,502
Feedback	3,8	1,2	5,0	3,728	,9710	,943
Content validity	3,0	2,0	5,0	3,667	,7698	,593
Resistance to change	1,7	3,0	4,7	3,627	,4119	,170
Peer Support	3,8	1,3	5,0	3,560	,8608	,741
Resources	1,8	2,3	4,0	3,020	,4783	,229
Ability to transfer	3,2	1,0	4,2	2,752	,8723	,761
Valid N (listwise)	25					

Considering that the rating scale for each statement of the instrument is 1 to 5; where 1 means strongly disagree and 5 strongly agree. The dimensions which were rated with the highest grades correspond to those relating to transfer design and opportunities, with an average rating of 4.1; followed by organization development dimension with a mean score of 4.0. On the other hand, the dimension averaged with the lowest grade was the one related to the transfer ability with a mean score of 2.7. (Fig.1).

5.2. Analysis of interviews on knowledge transfer

The semi-structured interview sought to respond the first specific objective related to describe the status of the

training transfer and other knowledge transfer mechanisms in the chosen institution.
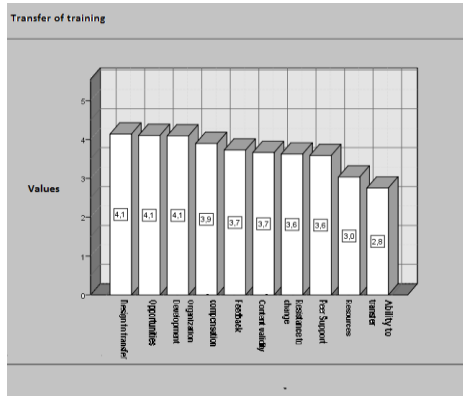

Fig. 1: Average dimensions on transfer of training.

Three managers were selected to answer seven key questions that could be modified, expanded or re-evaluated from the dynamics of the interview.

The responses tend to describe the current state of the knowledge transfer in the institution as something that exists in everyday life but that is not structured yet. In this regard, the interviewed 1 said: "Although there is not something structured on knowledge transfer, we have some approaches from human management perspective related to what we call business education." The interviewed 2 commented: "In the institution's profiles manual mentions that the leader of Human Management should ensure knowledge management, but for now is currently only found in written version, as we have not structured everything well. This task is shared between the dependency of Science, Research and Technology, where they are doing all repositories, and Human Management. But we still have a lot effort to do."

When we asked about other transfer mechanisms in addition to training the interviewed commented about digital media in which explicit knowledge rests as: Koalas (saved conference presentations), Content Management (teachers assembled material found on the web or designed by themselves to work with students) and the website (contains general information and updates on services and events of the company).

Other transfer knowledge mechanism were also mentioned such as research and consulting networks, the interviewed commented that they have had links with outside companies for several years, companies with whom we share double track skills; including: Explore Park (space for science and technology linked to Medellin´s major), Quality Schools (Medellin´s major program that seeks certified educational institutions to partner the evolution of public schools in the certification process), UN Model (educational strategy in which high school students interact with colleagues from other schools in the city).

The interviewed 3 clarified that: "the institution´s interest has been sharing knowledge among sector institutions rather than generate economic profit." Organization-

al thinking regarding knowledge transfer is not seen from the company´s economic productivity perspective.

With respect to the question related to tacit knowledge, the one, which comes from experience, the interviewed agreed to confirm that the people who come to the institution receive initial training from the directives and then in everyday situations, working peers are responsible to explain and join them on the institutional dynamics. The interviewed 1 mentioned a concern about people who is retirement: "We do not have a mechanism for people who are retiring, so they can leave their knowledge, they just go and their knowledge is lost because we do not train someone else to replace them; We are going to start working on that because it approximates the maximum retirement of several institution´s leaders and we have to be prepared".

6. Discussion and Conclusions

From the results generated by the two instruments used (transfer survey and interview managers), we can set that knowledge transfer is found to adjust to the institution´s dynamics on a day to day basis; there is no evidence of a management structure planned and delimited that ensure institution´s objectives and scope exist according to the real needs. Knowledge transfer occurs in random daily dynamics of wasted risking possessing intangible resource through its staff.

In the chosen institution, mechanisms to transfer explicit knowledge were found; mainly of the digital type that have been institutionalized through the quality certification process, an example of this is the characterizations of each process, which rest on the website; Manager Contents, in which teachers save information worked with students and Koalas, system that can hang presentations of trainings conducted by intranet.

When training is one of the means through which knowledge and skills are acquired, and subsequently enables the transfer of them; it calls the attention the qualitative results on the benefits of training against the quantitative results related to the transfer limitation. In the qualitative phase, we found that the training has helped them to improve their job performance by 88%. In the quantitative phase of the survey questions related to the dimension of "ability to transfer" obtained the lowest result 2.7; argued among major limitations the workload, priorities and time to apply what they have learned. Although the interviewed see the training usefulness, they express that limitations for an adequate transfer exist.

6.1. Recommendations for the organization studied

Start the structuring of a knowledge management program in which mechanisms are taken into consideration for the transfer of both explicit and tacit knowledge, valuing intangible resource that the organization has in its employees and encouraging the institution to the creation of new knowledge through reflection and research faculty.

The leaders in charge of knowledge management must look towards the earning of the training offered to teachers and other employees, achieving a recovery cycle between the investments in training programs and what was transferred by the staff in their work settings (classroom or other school spaces).

Considering the results obtained from the investigation as to the knowledge transfer; it is important to highlight the positive aspects of the organization, as they are set to be features that enable a breeding ground for the use of institutional knowledge, it is also important to highlight the quality of the courses offered to teachers, since they bring the opportunities and resources provided by the organization for the exploitation of new knowledge and the company´s interest for personal and professional employees´ development.

It is recommended to switch from transmitting information to knowledge generation, which makes the organization unique.

It is also necessary to create the repository of knowledge, which was built up over the years by teachers and directors through practices and pedagogical innovations, so that they are not diluted over time, due to teachers´ generational changes and also they can achieved enrichment of the new institution staff.

The talent management processes leaders can lead efforts to develop administrative structures that overcome the chains of command, and as a consequence, they can empower the different members of the organization in achieving the goals set at the institutional level. It is necessary make changes in the organization so it can go from a leadership to a horizontal model, where the expression and construction of knowledge to flow; enabling communication, exchange of ideas and social participation.

The institutional educational project, of the studied organization, defends in its policies and objectives characteristics such as pluralism, democracy, openness to decision making and service; aspects that demand changes to achieve configuration of the learning community where they are valued, and at the same time potentializing the talents of the individuals who contribute in the knowledge construction.

The research results also suggest reviewing the teachers´ workload in order to facilitate the knowledge transfer gained in the training courses. The training plan is designed in the institution, besides remaining responsive to the interests of staff, it must ensure the time and the conditions of the learning application by teachers in their work places; otherwise, the efforts of the organization will be diluted among teachers´ routine activities related to their workload.

6.2. Limitations

The quantitative instrument related to the knowledge transfer, was primarily aimed to measuring the training, aspect that limited the results and led the researcher to build another instrument to achieve other transfer to collect data on transfer and knowledge management.

The results belong to a specific population of a private educational institution limiting the results to the realities that are lived within that organization. To achieve more widespread in future research different populations could be included.

6.3. Further Research

From the experience of this research we recommend the following actions for future studies:

Perform a study in comparative mode, so that the resulting information has higher reliability and transfer to other educational contexts.

Build a tool that involves not only training but also other mechanisms and factors influencing the knowledge transfer.

Transfer the correlation variable with other variables such as the type of leadership, teacher performance assessment, work environment, among together; so you can extend the study of this subject in educational settings.

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