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Evaluation of the socialization of knowledge and collaboration in educational management

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Abstract - *The authors, using qualitative research methods, the Case-Based Reasoning as a paradigm of Artificial Intelligence and based on various data and opinions obtained from research on educational networks developed previously achieved knowledge representation for the status of socialization and collaboration in the process of educational management of selected educational institutions. The base case was tested with various situations and the results were 100% correct (in the test cases were used whose answers were known). The result intersects technological aspects associated with conclusions and recommendations to educational management, which were timely validated in previous processes and ensures the robustness of the proposal that article is performed*.

Key Words: case-based reasoning, cause and effect diagram, education, management

1. INTRODUCTION

Education is one of the major needs for all human societies, consistently working continuously towards the development of educational institutions to meet the needs of the present and the future in line with the data. Add to that the rapid change in the structures of scientific, cultural, and technological knowledge in the world has led to the imposition of the calendar and the continued development of a message and the activities of educational institutions. This requires a new style and distinct in order to qualify them in the education system as a system of interest to build human and walk him to the paths of creativity and excellence. The teacher is the backbone of the educational system, the maker of mankind and the architect of society [2].

The new management concepts, make processes simplified to obtain efficiency, efficiency and effectiveness in management work, for which there are technical tools, such as guides and manuals that unify procedures, organize information and are leaving evidence of the execution and results of the management performed.

Educational management is a set of practical theoretical processes integrated horizontally and vertically within the educational system to meet the demands of society. It seeks to respond to the real needs and be a motivating and internal dynamizing entity of educational activities aimed at increasing its quality. The relevance and magnitude of educational management in recent years has stimulated the development of tasks that allow the orientation of work and pedagogical practices towards the fulfillment of the current demands socials that is why it is often said that educational management is the way to the improvement of education.

An important element to achieve effectiveness in educational management is to have an accessible data record that supports decision making at a given time. For this it is essential to organize the data that are produced daily with some tool that facilitates this work. Intelligent data analysis is part of many current research and all paradigms of knowledge-based systems originate study and results for application in domains of today's life.

As it is expressed in [3], "in the case of universities .... The application of knowledge management should be directed both at the internal reorganization of all its processes and at improving teaching and research with the aim of facilitating the development of a competitive university adapted to the new demands of society.

In the doctoral thesis of Roberto Passailaigue Baquerizo it is recommended "To continue deepening in the search of good educational management practices that can be incorporated into a network of institutions" [4]. This author investigates new management concepts in educational institutions and as a result of his inquiries develops an educational network that constitutes an alternative model of management that manages to raise the quality of private education within the general education system of the city of Guayaquil And contributes to the socialization of knowledge and collaboration between institutions.

Quality depends on the institution infrastructure, faculty's research and development activities and industry institution interaction etc. [5]

2. MATERIALS AND METHODS

2.1 The cause-effect diagram

It is used for the graphic representation of multiple cause-effect relationships among the various variables involved in a university management process. Given that quality was part of the objectives of research and educational management is a complex and multi - causal process, it was decided to use this diagram.

2.2 Focus group

This qualitative method was applied at various times and with different groups. It was combined with the diagram causes effect to organize aspects that affect the socialization of knowledge and collaboration in the educational management of higher education.

2.3 Case-based reasoning (RBC)

Knowledge management is now a necessity in all organizations where turning knowledge into a productive resource is what distinguishes one organization from another and where success lies in the good management of intangible resources of organizations, especially knowledge. Knowledge management is a new managerial approach based on the recognition and use of the most important value of organizations: human resources, their knowledge and their ability to place them at their service.

At present, the complexity and the large volumes of data make it difficult to manage. In this sense, Knowledge Based Systems (SBC), as artificial intelligence techniques valid to approach the construction of intelligent systems [6], provide facilities for knowledge management. An SBC is a system that helps solve problems, using a symbolic representation of knowledge in a given domain. In particular, it can be used in areas where it is necessary to consult the knowledge of the experts for the search for new solutions.

The complexity for the development of a knowledge-based application is largely due to the way in which such knowledge is represented as a fundamental element. There are different ways to represent it, the most widespread are Rule Based Systems (SBR), Artificial Neural Networks (RNA) and Case Based Reasoning (RBC).

Case-based reasoning is the process of solving new problems based on solutions to previous problems. The RBC is used to obtain reusable knowledge in the socialization process. In the research the authors use the RBC paradigm to register cases evaluated by the diagram causes effect associated to the deficiencies of the educational management and the realization of predictions in the organization under study.

Since it is possible that past issues arise in a similar fashion, CBR systems are very useful for problem management. [7].

3. RESULTS AND DISCUSSION

Information systems are fundamental to formalize a representation of information and knowledge that contributes to knowing and transforming the state of socialization and collaboration in the educational management process as a way to improve education.

As a first result of the analyzes carried out, it was obtained that the main causes that affect the socialization of knowledge and collaboration in the object centers of study and that are organized in an educational network as an alternative model of management are:

- Low-skilled teachers. Of course, this has a high implication in the difficulties with quality.
- Limited quality control.
- Poor socio-cultural exchange between institutions.
- Deficiencies in educational management.

Based on these main causes, the cause-effect diagram was developed, which has been used as a guide in the orientation of the educational management work.

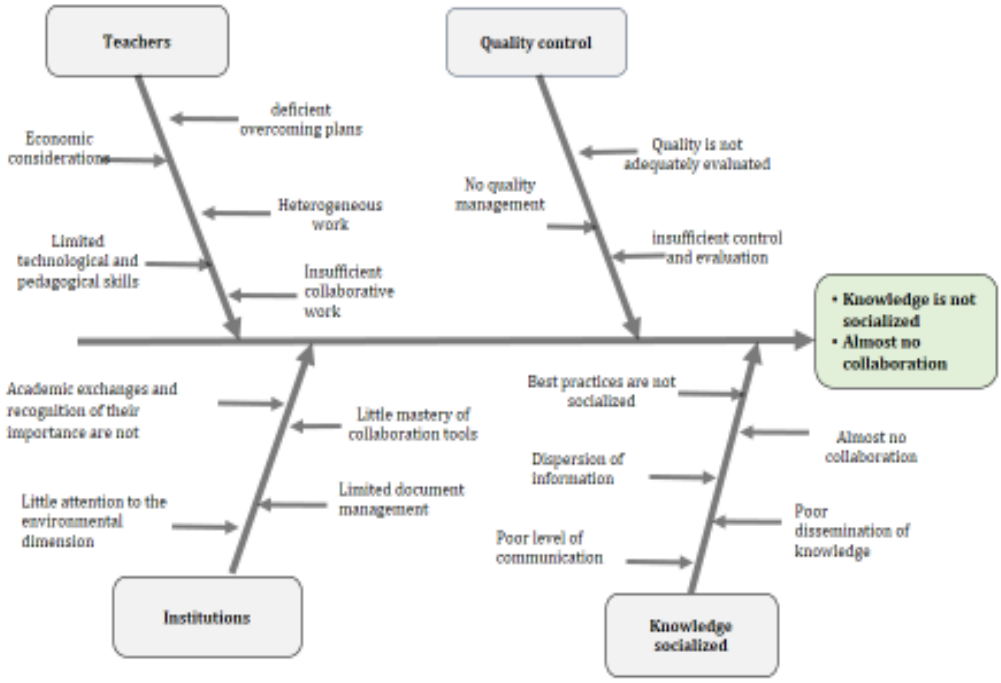

Fig-1. Cause-effect diagram

This result reflects the desirability of creating an organic grouping of educational institutions that exchange information, carry out joint activities, promote spaces for collective reflection, generalize best practices, among other things, which will contribute to increase collaboration and socialization of the Knowledge and as a consequence to improve the preparation of teachers, to make the functioning of institutions more efficient, to make better use of resources and consequently to achieve a higher quality education.

The second result that was obtained is a table that can be adjusted and used to predict possible trends in Higher Education. For this design, the following results were taken into account: the results of the research carried out in the study centers, the evaluation of the processes included in the university management, expert opinion and participant observation, which as scientific methods were applied and with it a case base was formed with the structure of features and values shown below.

Table 1: Proposed structure for the creation of knowledge bases

No.	Components and variables	Possible values
PREPARATION OF TEACHERS		
1	Existence of individualized improvement plans	**YES , NOT**
2	Technological competences of teachers	High, Normal, Low
3	Pedagogical competences of teachers	High, Normal, Low
4	Teacher Salary Level	Adequate, High, Low
5	Homogeneous content treatment	Always, Almost always, Never

6	Teamwork	Always, Almost always, Never
SOCIOCULTURAL EXCHANGE		
7	Networking	All, Some, Nobody
8	Environment Care	Fairly, Little, Nothing
9	Domain of collaboration tools	**YES , NOT**
10	Disclosure of Good Practices	Sufficient, Insufficient
QUALITY CONTROL		
11	Quality improvement	Permanent, almost always, Never
12	Quality is managed	**YES , NOT**
EDUCATION MANAGEMENT		
13	There is a plan to improve learning	**YES , NOT**
14	Planning characteristic	Accurate, Normal, Inaccurate
15	Evaluation and control	Good, Fair, Poor
16	Information	Concentrated, Sparse
17	There is unity between the instructive and the educational	**YES , NOT**
PREDICTABLE FEATURES		
18	Socialization of knowledge	Good, Fair, Poor
19	Collaboration Degree	Wide, Normal, Low

According to the nature of the problem dealt with in the article, the attributes presented in Table 1 constitute a selection of elements of information made based on the fundamental aspects that affect the socialization of knowledge and institutional collaboration.

This knowledge base can be useful for applying a case-based reasoning tool and predicting the state of knowledge socialization and collaboration that are essential aspects of educational management. For the case of this article we select the socialization of knowledge and collaboration, because they are the fundamental objective of the research developed.

It is essential to emphasize that the knowledge base will infer more accurately to the extent that new cases are included and that it can be modified both in its features and in the possible values corresponding to the research requirements

3. CONCLUSIONS

- Educational management can be more effective as new technologies are incorporated and these are combined with the experience that in social practice and collaboration are protagonists.
- The development of a cause-based diagram, based on group interviews, organizes the information in an appropriate manner for the establishment of a Knowledge-based System, an important auxiliary memory, of far-reaching decision-making.
- Case-Based Reasoning proved to be an appropriate option, within the paradigms of Artificial Intelligence, to store the experience, register it, retrieve it and use it for analysis and decision-making in new situations.
- The selection of a friendly tool is very important for non-computer users to use the inference system.

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