

**EDUCATION EVALUATION BASED ON ITS DIMENSIONS AND COMPONENTS:
An Analysis of Official Graduate Programs Evaluation in Brazil**

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ABSTRACT

Education must be evaluated at every level, both in terms of teaching-learning and institutionally. Given this broad scope, a conceptual framework to enable understanding education and providing grounds for its evaluation becomes essential. The purpose of this study is to present the theoretical basis for analyzing education evaluation, based on an intense review of the literature and used to analyze official graduate programs evaluation in Brazil. The findings confirm the conceptual framework's validity and the need for internal and external evaluations, the benefits and risks of evaluations emphasizing certain aspects.

Keywords: *Education, Evaluation, Education Evaluation*

1. INTRODUCTION

Education may be evaluated both institutionally and in terms of the learning-teaching process. The latter includes the criteria intended to evaluate students' learning. Evaluating learning quality is complex and depends on a set of variables, involving various social agents. Those involved in the learning-teaching process, including learning institutions, have different influences, which makes such an evaluation more difficult. Therefore, the findings can only be understood when coupled with an extensive analysis of the context within which the learning-teaching process takes place (INEP, 2003).

The student-learning evaluation processes, in particular those using instruments applied to large numbers of students, cannot cover all the dimensions that make up the concept of education quality. In addition, one must bear in mind that an evaluation process is related with a management cycle that includes planning and implementation. Therefore, an evaluation system requires constant assessment and improvement (Verhine, Dantas & Soares, 2006, Sobrinho, 2010, Frick *et al.*, 2010, Kupermintz, 2003).

The variable sets with the most influence on student learning include 1) students' and households' social and economic circumstances; and 2) the conditions of learning supply, including school infrastructure, school-management types, instructor training and pedagogical practices (INEP, 2003).

This context of education is widely applicable and enables observing the need for institutional and teaching-learning evaluations, both internal and external.

In today's environment of major socio-economic and technological evolution, education must be constantly evaluated and improved (Tynjälä, Välimaa & Sarja, 2003). This emphasizes the importance of studies about education evaluation.

The purpose of this study is to present a proposed theoretical basis to analyze the criteria and items used in education evaluation, both institutional and in terms of teaching-learning. The theoretical basis was applied to an analysis of official evaluation of graduate-degree administration programs in Brazil, where it is conducted by the Ministry of Education's Higher Learning Personnel Development Coordination ("Coordenação de Aperfeiçoamento de Pessoal de Nível Superior" – CAPES).

The findings confirm the validity of the theoretical basis and enables explicitly stating the foci of the official CAPES evaluation, as well as suggesting paths for improvement. The theoretical basis reinforces the need for internal and external evaluation to enable covering all education-related matters. The evaluation provides inputs to determine the quality of education at a certain institution, as well as to identify points for improvement and planning.

In the research project that led to this study, the review of the literature identified more than 360 articles from which 145 were selected because they were considered to be more capable to contribute to the effort, concentrating mainly over the past 10 years, but not only in this period. The selected papers were published in 13 periodicals with an average JCR of 1.57 and a highest JCR of 3.127. This study used 109 of these articles, and additional ones as well. The decision to carry out such an extensive review of the literature and the use of so many references have to do with the complexity of the subject at hand and the need for theoretical consolidation of the proposed framework.

2. EDUCATION

Education must be oriented toward the society in which it occurs and its purpose is to shape said society. Its importance, form and principle, as well as its evaluation, are involved in the public Education policy (Karseth & Sivesind, 2010, Balarina & Benavidesb, 2010, Poulson, 2001, Thomas, 2004, Wimshurst *et al.*, 2006, Dourado, 2002).

Many authors today argue for lifelong education, in a constant pursuit of improvement of each individual's skills. This approach, however, has been facing criticism as, according to it, the end-purpose of individuals lies in economic competitiveness (Lima, 2010).

The teaching-learning process, regardless of the period of the student's life in which it occurs, is complex, involves a wide range of concepts (Squires, 2004) and is influenced by external interferences: cultural, social and political (Kumaravadivelu, 2001, Lattuca, 2002).

Defining as Education that which takes place by means of a learning institution, while recognizing that a comprehensive Education also includes that which occurs independently from formal and traditional institutions, evaluation must cover schools' organizational and managerial aspects (Onwuegbuzie *et al.*, 2007).

The pedagogical policy of a learning institution, including the knowledge required from faculty members, the role of the learning institution itself, the role of faculty members and students in the learning-teaching process, pedagogical knowledge, and pedagogical facilitation, is determinant to the definition of all the dimensions and components of Education, and in particular of the results to be achieved (Major & Palmer, 2006, Hall & Smith, 2006).

2.1. Dimensions of Education

Education may be regarded from the angle of the Dimensions of Education: Knowledge, creation and systematization, Programs and Courses, and Results. The Knowledge and the Programs and Courses dimensions provide the basis for the attainment of the Results dimension, and this relationship implies different approaches from evaluation processes.

Knowledge: knowledge creation and systematization derive from the organization of professors, researchers and students in their areas of competence, activity and interest. Such professors and students may also act in other areas and forms of organization. Critical success factors on this dimension include the definition, profile and composition criteria of the group of instructors, researchers and students, as well as their research, publication and guidance capabilities.

The knowledge that the faculty must have has been the subject of studies and comprehends the specific domain of knowledge and pedagogical strategies; more recently, it also included education-oriented technologies. Studies show a direct link between this knowledge and successful learning on the part of students (Major & Palmer, 2002, Brownlee, Boulton-Lewis & Purdie, 2003, Beastall, 2006, Yarmohammadiana *et al.*, 2011, Koehler *et al.*, 2007, Angrist & Guryan, 2004, Wayne & Youngs, 2003), as well as that this knowledge is connected with the education model (Stevens, 2010, Samuelowicz & Bain, 1992), making the faculty-formation model critical (Hiebert *et al.*, 2002, Beastall, 2006, Early *et al.*, 2007, Margolinas *et al.*, 2005, Winch, 2004).

The faculty must be prepared to assimilate and employ Education-oriented information and communication technologies, as well as to understand that this new infrastructure requires knowledge and dedication. The use of

the Internet may be effective and take on several configurations, demanding additional time from instructors. This is due to the technology's undeniable availability and potential in this arena, regardless of type and intensity.

As with the other dimensions, faculty members must be under constant evaluation (Hanushek & Rivkin, 2007).

Programs and Courses: Courses are defined by regulations and standards that govern their proposition, disciplines, academic activities and other details. The critical element on this dimension is the construction of a syllabus structure to maximize the sharing of knowledge from faculty to students, such knowledge to be integrated with research projects in such a manner as to enable high-level results in skills building and improvement.

The course's objective, contents and pedagogical strategy must be clearly mutually integrated (Billing, 2004). They must also be consistent with the target public and its profile (Jeffrey, 2009, Betts, 2008).

Results: Programs and courses results are crystallized in the skills of the students taking part in the learning-teaching process. Research results must be expressed in publication, social and business contributions, attendance at institutions and related activities, enabling measurement of the programs' impact and contribution. The domestic and international visibility and the relevance of the results are critical factors on this dimension, as they emerge from the students' learning and educational, professional and social performance, and from the intellectual production by faculty members and students, as published in highly relevant domestic and international periodicals.

Clearly, an implied challenge on this dimension lies in defining what the teaching-learning process is expected to produce as a result, as this contains the question of what kind of individual one intends to train (Gabel, 2002, Duarte, 2007, Shupe, 2008). Still, the importance of measuring and managing education performance is undeniable (Mayston, 2003).

One of the most important challenges in education lies in defining what the expected results are, how to measure them, and when they are attained. Several models have been used, but several are still the target of frequent criticism, such as term exams (Warren & Edwards, 2005, Shupe, 2008). Others include more comprehensive aspects, such as student satisfaction (Duque & Weeks, 2010).

2.2. *Components of Education*

Programs and courses must be structured as components to maximize use of the quality of instructors, researchers and students and ensure high-quality results. While addressing the use of technology in education, Andrade and Lima (1993) analyzed the connection between syllabus, methodology and tools. Albertin and Moura (1994) expanded on this view by proposing the basis for Components of Education. These include Objectives and Students, Contents, Pedagogical Strategy, and Infrastructure.

The **Objective** component is central and made up of **Course Objective** and **Pedagogical Objective**, as well as the public for which the courses is intended, providing the basis for the integration with the school's strategy and other courses, as well as for the definition of the remaining components. Contents, methodology and technologies must be clearly related and coherent with the objectives and students, and with one another, as components that interact to form the course itself.

Definition of the pedagogical objective is critical and has caught the interests of researchers, in some cases with the objective of developing a method for this purpose (Boudamoussi *et al.*, 2006).

Studies confirm that students with distinct characteristics and in different courses, but sharing the same objectives, may attain similar results and achieve their objectives, if the contents, pedagogical strategy and infrastructure are consistent with those characteristics (Oliaro & Trotter, 2010, Matona, 2009, Duque & Weeks, 2010).

The **Contents** component is the knowledge to be transferred shared, acquired and appropriated by students in the manner most appropriate to them, enabling the teaching-learning process to take place.

This component must be constantly reviewed and updated so that it can effectively contribute to learning (Soh *et al.*, 2007, May & Supovitz, 2006, INEP, 2003).

A perfect integration between Objectives and Content leads to improve Education results, particularly in terms of student skills at term (Gómez *et al.*, 2007, López, 2007).

The **Pedagogical Strategy** component concerns the teaching strategies that enable contents to be transferred to, shared with, and acquired and appropriated by students, thereby ensuring the results of the teaching-learning process.

This component emphasizes the importance of a pedagogical strategy being planned and effectively followed by instructors (Schoen *et al.*, 2003).

The pedagogical strategy must adhere to the student's profile and learning style (Tulbure, 2011, Nian-Shing *et al.*, 2011, D'Andrea, 2006, Thompson & Serra, 2005), as well as to the course's contents (Laverde *et al.*, 2007).

Studies of this component comprehend student-instructor interactions and didactic techniques, as well as other activities, such as evaluation, as determinants of learning quality. (Yorke, 2003, Krathwohl, 2002, Wilson & Scalise, 2006, Hilton III *et al.*, 2010).

The **Infrastructure** component includes the infrastructure and the information and communication technologies needed to implement learning strategies and enable access to the contents in its various forms and locations, as well as interaction among participants in the learning-teaching process.

The use of information and communication technologies in education is deemed important to the improvement of the teaching-learning process (Fritz, 2011, Mooij, 2007, Mentis, 2007, Parpala & Lindblom-Ylänne, 2007, Stensaker *et al.*, 2007), particularly in connection with new generations of students (Ayala, 2009), but the value of the presence of instructors and their interaction with students remains of the utmost importance to quality learning in some kinds of education (Mastermana *et al.*, 2009).

Studies show the value of interaction among participants in the learning-teaching process, as enabled by the use of information and communication technologies, for improved learning (Bernard *et al.*, 2009, Ruthven & Hennessy, 2002, Johnson *et al.*, 2008). The effectiveness of education based on the use of such technologies depends on how familiar instructors and students are with them (Johnson *et al.*, 2008, Windschitl & Sahl, 2002, Shrinera *et al.*, 2010), as well as on the degree of interaction and customization enabled (Wang, 2003, Zhao & Frank, 2003).

These components are mutually necessary and restrictive: content requires certain teaching methodologies, as well as technologies for its handling and for the realization of the program, even as it may be restricted by the methodologies and technologies used if components are handled inconsistently. Similarly, methodology requires certain technologies for successful application – and inappropriate technologies may in fact restrict the methodology.

Studies show the importance of pedagogical strategies and the use of information and communication technologies to improve learning, and that these two components must be integrated (Cox & Graham, 2009, Soh *et al.*, 2007, Jaffee, 1997, Koehler *et al.*, 2007).

The contents involved may, due to complexity, create requirements in terms both of the information and communication technologies to be used, and of teaching methodology. These tools, in their turn, may – also due to complexity – impose restrictions on content and also on teaching methodology. Finally, methodology requires appropriate tools as a result of its complexity; such tool may, if inappropriate, restrict certain aspects of the contents.

The content-method relationship, to which we refer as pedagogical strategy, has always been a subject of study in the many areas and models of education (Lopes, 1998, Stevens *et al.*, 2005, Glatthorn, 1999).

The restriction-requirement dynamics among these three aspects indicates that selection of a syllabus may require, both directly and by means of methodological demands, non-existing information and communication technologies, thereby leading to the development of such technologies (Roberts-DeGennaro & Clapp, 2005). Contents are ultimately affected by the use of education-oriented information and communication technologies (Moore, 2005).

Information and communication technologies may be used as educational tools. In this sense, such technologies are no longer just a tools to teach students, but rather tools by means of which students develop something, so that learning occurs as a result of the performance of a task mediated by the tools. Such tasks may include information surveys, information exchange, database enquiries, database creation,

composition, resolutions from various domains of knowledge and the representation of such resolutions, real-time process controls, computer network communication and use, etc.

Because technologies influence perceived time and space, they produce new forms of relationship. In the case of Education, this includes the relationship between and among instructors and students. Such a situation may be understood as a change in pedagogical strategy (Pires, 2010, Larreamendy-Joerns & Leinhardt, 2006).

2.3. *Dimensions and Components of Education*

When the dimensions and components are consolidated, the latter become an additional dimension, influencing and influenced by the others, as Figure 1 shows.

Academically, the Knowledge dimension, with its instructors researchers and students, must be the basis for an adequate and consistent composition of the Programs and Courses component, which must in turn ensure the expected Results of the teaching-learning process that are subject to evaluation.

Administratively, we find managerial results and other resources, which ensure and relate with the academic aspect.

Education dimensions and components are directly connected and require clear consistency with what is expected as the result of the education process and the manner in which it must take place (Stevens, 2010, Lee-Post, 2009), and must be embedded in the institution's pedagogical policy and management (Browne, 2005).

Figure 2 shows the proposed management structure for learning institutions, taking into account the view provided earlier and emphasizing its interrelations.

The three managerial areas are as follows: institutional, comprehending the broadest level; administrative/financial, which is concerned with the institution's overall resources and results; and academic, which includes the dimensions and components of education. Institutional management relates with administrative/financial management by defining the resources and results strategy; and with academic management by defining its strategy. Academic management relates with administrative/financial management by means of the application of resources. Finally, all three areas inter-relate via the pedagogical plan.

3. EDUCATION EVALUATION

Education evaluation has been approached with quality criteria including efficacy, efficiency, effectiveness, equity, satisfaction (Ferreira & Tenório, 2010). This tends to expand the focus of evaluation, which must also be considered within a national context (Greena & Oates, 2009, Mason *et al.*, 2001).

Studies suggest that there may be a global evaluation model, but that it would not be entirely appropriate for application to the various countries because unique traits exist that must be considered (O'Neill, 2010, Martínez & Moreno, 2007).

Quality evaluation for Education must take into consideration the management, teaching and research aspects (Sarrico *et al.*, 2010, Oliver *et al.*, 2008, Baartmana *et al.*, 2007, Doherty, 2008, Biggs, 2001, Aidla & Vadi, 2008, Barnetson & Cutright, 2000). Criticism, however, has been leveled against the criteria and tools that are insufficient – quantitative ones in particular – and fail to generate the expected results for education quality (Yonezawa, 2008, Blackmore, 2004, Martínez & Moreno, 2007). The criticism also includes the makeup of evaluation commissions and the costs of the process (Stella & Gnanam, 2004). Another criticism concerns the fact that a generic instrument would not be capable of capturing the influence of students' individual characteristics (Vermunt, 2005).

It is worth mentioning that the means of evaluating traditional and distance-learning courses must be different because of the differences between the two modes (Stella & Gnanam, 2004).

Certainly, the fundamental and necessary base for education evaluation lies in education quality, which must be evaluated (Thomas, 2004, Onwuegbuzie *et al.*, 2007, Cohen *et al.*, 2003).

3.1. *Education Evaluation Framework*

The dimensions and components of education may provide the basis for the proposed Education Evaluation Framework. The items that make up the Framework are provided in Figure 3.

4. GRADUATE EDUCATION EVALUATION

Analysis of graduate-degree education evaluation used the CAPES evaluation card, as it applies to all programs and is the only nationwide evaluation of its kind in Brazil. Evaluations are conducted at three-year intervals, with yearly tracking. The study was developed based on documentary analysis of the evaluation cards, using the content analysis technique (Bardin, 2011). The selected categories were the proposed dimensions and components of education.

In its graduate administration programs evaluation process, CAPES uses criteria divided into five categories, with the respective items and percentage weights. This paper uses the 2013 evaluation card (CAPES 2013).

1. **Program Proposition** (0%):
 - 1.1. Coherence, consistency, scope and currentness of the areas of concentration, research tracks, ongoing projects, and syllabus proposition (50%).
 - 1.2. Program planning concerning future development, in the light of the domain's international challenges for the production of knowledge, its purposes for better student training, its goals for richer social embeddedness of alumni, according to the area's parameters (30%).
 - 1.3. Teaching, learning and, where applicable, extension infrastructure (20%).
2. **Faculty** (20%):
 - 2.1. Faculty profile, considering, titles, education diversification, development and experience, and compatibility with and adequacy for the Program's Proposition (15%).
 - 2.2. Adequacy and dedication of permanent faculty members to the program's research and education activities (30%).
 - 2.3. Distribution of research and education activities among the program's faculty members (30%).
 - 2.4. Faculty members' contribution to undergraduate learning and/or research activities, in the light of both the item's potential repercussion on future graduate students and the training of more skilled professionals at the undergraduate level (10%).
 - 2.5. Faculty members' attendance at events aligned with their areas of dedication (15%).
3. **Students, Theses and Dissertations** (35%):
 - 3.1. The quality of theses and dissertations presented in the period of evaluation, relative to the permanent faculty and the number of students (10%).
 - 3.2. Distribution of tutoring for theses and dissertations presented in the period of evaluation relative to the program's faculty members (20%).
 - 3.3. Quality of the Theses and Dissertations and of graduate and undergraduate student authors (in the case of higher learning institutions with undergraduate programs in the same area) in the program's scientific production as measured by publications and other applicable indicators (50%).
 - 3.4. Program efficiency in training scholarship masters and doctors: Graduation time of masters and doctors and percentage of graduating scholarship recipients (10%).
 - 3.5. Student and alum attendance at events aligned with the program's proposition (10%).
4. **Intellectual Production** (35%):
 - 4.1. Qualified Program publications by permanent faculty members (50%).
 - 4.2. Distribution of qualified publications relative to the Program's permanent faculty (35%).
 - 4.3. Technical production, patents and other relevant forms of production (15%).
5. **Social Embeddedness** (10%):
 - 5.1. Regional and (or) national embeddedness and impact of the program (50%).
 - 5.2. Integration and cooperation with other programs and research and professional development centers related with the program's domain of knowledge, with the purpose of developing research and graduate studies (30%).
 - 5.3. Visibility or transparency of the program's actions (20%).
6. **Criteria for 6 and 7 Scores**:
 - 6.1. Performance at a par with international centers of excellence in the domain.
 - 6.2. Highly distinguished performance level relative to the other programs in the domain.

5. EDUCATION EVALUATION BASED ON EDUCATION DIMENSIONS AND CRITERIA

The Education Evaluation Framework may be used to analyze the evaluation items and criteria. Analysis of the CAPES graduate administration program evaluation based on the Framework was done in an attempt to establish ties between the CAPES items and the proposed dimensions and components and to elicit their inter-relations.

Figure 4 shows the results of the analysis, emphasizing the link between CAPES and Education Evaluation Framework items.

6. DISCUSSION OF THE CAPES GRADUATE PROGRAM EVALUATION BASED ON THE DIMENSIONS AND COMPONENTS OF EDUCATION

Analysis of the CAPES items used to evaluate graduate administration programs based on the Education Evaluation Framework enables observing the foci of evaluation and identifying potential areas for expansion.

The Knowledge Dimension of the Institutional Evaluation, which includes the faculty, concentrates all items relative to the Faculty, adding up to 20% of the evaluation. The evaluation comprehends the faculty's profile, dedication, distribution of activities, contribution and participation. This Dimension may also include the specific evaluation item for assignment of scores 6 and 7, as it evaluates distinguished production by faculty members, their participation in research projects and grants and scholarships earned.

On the Institutional Evaluation's Results dimension, considering the program's overall results, lie the Social Insertion item's criteria, which answer for 10% of the evaluation, specific items for assigning scores 6 and 7, and some of the Proposition-related items.

On the Pedagogical Strategy Dimension of the Teaching-Learning Evaluation lies one sub-item (1 of 4, 50% of the item's weight) of the Students, Theses and Dissertations item, which accounts for 35% of the evaluation. This link is based on the characteristics of examination panels and adherence of dissertations and theses to research tracks.

The Knowledge Vs. Course Inter-relation of the Teaching-Learning Evaluation, which relates faculty and student items with the course, includes some of the sub-items (2 out of 4, 70% of the item's weight) of the Faculty item, which accounts for 35% of the evaluation. It further includes some sub-items (2 out of 4, 65% of the item's weight) of the Students, Theses and Dissertations item, which accounts for 35% of the evaluation.

The Course V. Results Inter-relation of the Teaching-Learning Evaluation, which relates results items with the course, includes some of the sub-items (2 out of 4, 35% of the item's overall weight) of the Students, Theses and Dissertations item, which accounts for 35% of the evaluation.

The Results Vs. Knowledge Inter-relation of the Teaching-Learning Evaluation, which relates results items with the faculty and students, includes all of the sub-items under Intellectual Production, which accounts for 35% of the evaluation.

The items in the Program Proposition category connect with several Dimensions and Inter-relations. The technical and artistic production items, whose relative weight is low, are connected with the Results of the Teaching-Learning Evaluation Dimension.

This shows a marked focus on evaluation of the faculty and results of both the institution and the course, including assessments of distribution across faculty members. We find, however, that some items consolidate aspects that do not lie on the same Dimensions and Components.

The more specific items on the Knowledge (such as faculty: development; students: profile) and Results (such as human resources training: alumni tracking; social embeddedness: contribution to society) are dispersed without particular emphasis across a few items.

Matters associated with the Course dimension on its Objective, Pedagogical Objective, Faculty, Pedagogical Strategy, and Infrastructure components are generically addressed under Program Proposition.

Clearly, several aspects of the CAPES evaluation are addressed at the time of evaluation, using the large volumes of information that the programs submit. This information can be found in the reports prepared by programs and data fed into the CAPES capture system. The information and indicators are then associated with the categories' items, partly becoming objective criteria, but also reverting into qualitative analyses for the final grade assigned to each program.

A broader definition of the items and the incorporation of criteria from the various dimensions and components of Education, both institutional and teaching-learning, would enable a more comprehensive evaluation intended

to determine consistency of the inter-relations as well, and not based simply on faculty and results, with emphasis on dissertations, theses, and intellectual production.

The risk of such an expansion would be increased red-tape for graduate program evaluations, but a balance must be struck. The external evaluation conducted by CAPES does not include several aspects that must be addressed by internal evaluations or other external – and even international – ones.

7. CONCLUSION

The theoretical basis provided by the dimensions and components of Education proved itself comprehensive and adherent to the various aspects of education, from the angles of both institutional vision and teaching-learning process.

External evaluations, such as the CAPES evaluation for graduate administration programs in Brazil, do not cover all of the dimensions and components found in the proposed theoretical basis. This may in fact be deemed appropriate, as doing so would make the evaluation process much lengthier, more detailed, and prone to being ineffective. However, risks may also exist in the emphasis on the makeup, profile and dedication of the faculty and, most of all, in results being gauged based fundamentally on intellectual production, in addition to the overall evaluation of the program's proposition.

The risks this emphasis creates relate with potentially neglecting the means to obtaining the measured results and the components of the course itself, which provide the foundations for a quality course. As a result of this, an institution might topically and excessively foster intellectual production and successful tutoring, while reducing the emphasis on efforts to ensure a sound education for masters and doctors.

Another perception derived from this analysis is that evaluation centered on results, and particularly on intellectual production, end up evaluating faculty members and not necessarily the institution and course proper. The evaluation should be more comprehensive and take account of additional items and sub-items more closely associated with the course and the institution. It is worth emphasizing that external evaluations are important, but not sufficient for the purposes of program and course management, nor even for achieving improvements on the various fronts.

As such, to mitigate the foregoing risks, learning institutions should seek out a more comprehensive evaluation to include and integrate internal and external evaluations. Only with such complementary approaches will a learning institution be able to achieve a broad and comprehensive view of the dimensions and components of education, one that includes institutional, teaching-learning process, and education processes and results evaluations. It would thus be able to pursue and demonstrate quality. In Brazil, several higher learning institutions certainly make proper use of internal and external evaluations, and the official evaluation is an important element in this overall assessment.

The proposed theoretical basis for Education Dimensions and Components may be deemed appropriate as guidance for comprehensive education evaluations, as these would only be fully met with internal and external, domestic and international evaluations. These evaluations would be mutually complementary, and all would have to be present, otherwise a partial view would form of the quality of the education provided by a certain institution and its courses.

The full research project provides for similar analyses for the elementary, secondary and undergraduate levels of education, and both internal and external evaluations. Still, the findings discussed in this paper already provide important aspects for reflection on the evaluation process at hand.

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Society

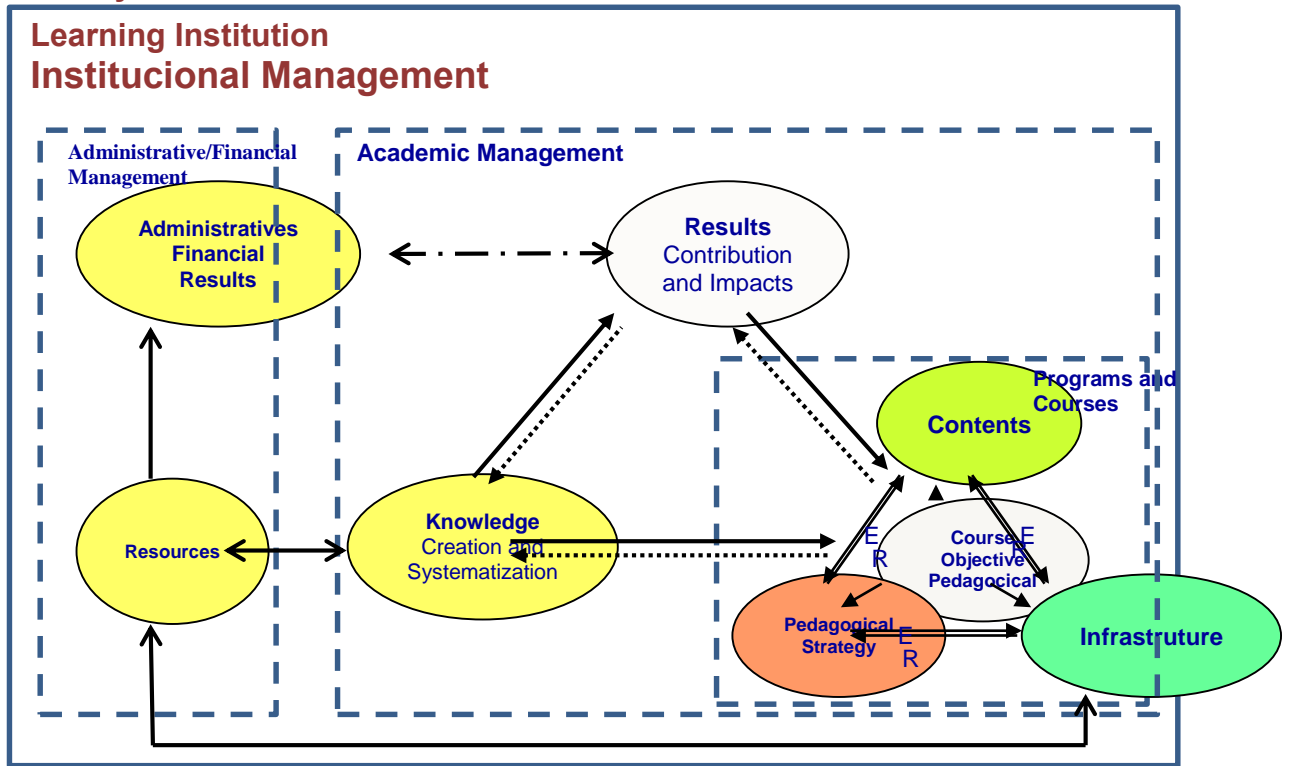


Figure 1 – Dimensions and Components of Education
 Source: The authors

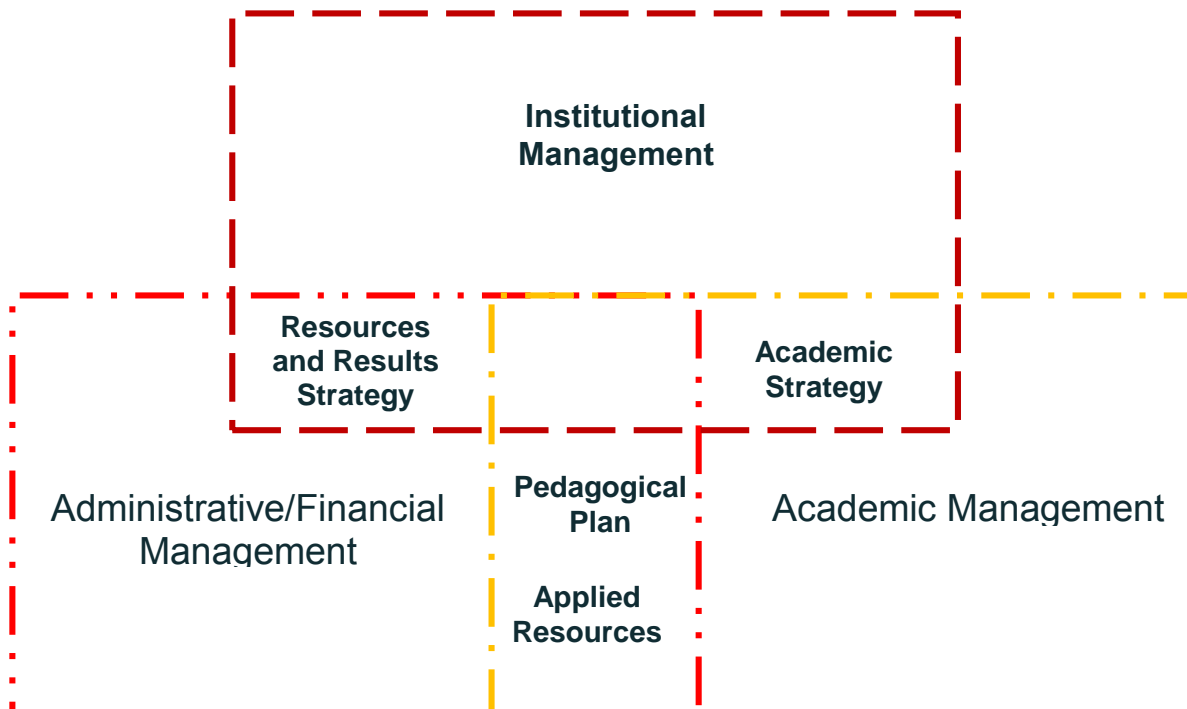


Figure 2 – Education Management Areas
 Source: The authors

Institutional Evaluation (AI)	Adherence to public education policy (AAPE)			
	Management (Institutional/Administrative & Financial/Academic) (GE)			
	Dimensions of Education (DE)	Knowledge (Conh)	Faculty (CDo) Students (CDi)	
Resultado (R)				
Teaching-Learning Evaluation (AEA)	Components of Education (CE)	Course (Course)	Course objective (OC)	
			Pedagogical objective of the course (OPC)	
			Course faculty (CDiC)	
		Contents (Cont)		
		Pedagogical Strategy (EP)		
		Infrastructure (IE)		
		Component Inter-relations (IRC)	Objective/Pedagogical objective/ Course Faculty (OCXOPXCDiC)	
			Contents Vs. Objective/Pedagogical objective/ Course Faculty (ContXOCXOPXCDiC)	
			Pedagogical Strategy Vs. Objective/Pedagogical objective/Course Faculty (EPXOCXOPXCDiC)	
			Infrastructure Vs. Objective/Pedagogical objective/Public (IEXOCXOPXCDiC)	
	Contents Vs. Pedagogical Strategy (ContXEP)			
	Pedagogical Strategy Vs. Infrastructure (EPXIE)			
	Infrastructure Vs. Contents (IEXCont)			
Dimension Inter-relations (IRD)	Knowledge Vs. Course (ConhXCurso)			
	Course Vs. Results (CursoXR)			
	Results Vs. Knowledge (RXConh)			

Figure 3 - Education Evaluation Framework

Source: The authors

Item / Percentage		1-0%			2-20%			3-35%			4-35%			5-10%			6-na					
Item		1	1	1	2	2	2	2	3	3	3	4	4	4	5	5	5	6	6			
		1	2	3	1	2	3	4	1	2	3	4	1	2	3	1	2	3	1	2		
Percentage weight of the item		5	2	3	2	4	2	1	2	1	5	1	5	3	1	5	3	2	N	N		
		0	0	0	5	5	0	0	0	5	0	5	5	0	5	0	0	0	A	A		
A I D E	APPE																					
	GE																					
	D	Conh	X	X		X	X	X	X													
			CDo																			
E		CDi		X																		
		R		X	X										X	X	X	X	X	X		
A E A	C E	Course	OC																			
			OPC																			
			CDiC																			
		Cont		X																		
		EP									X											
		IE			X																	
	I R C	Component Inter-relations (IRC)	OCXOPXCDiC																			
			ContXOCXOPXCDiC																			
			EPXOCXOPXCDiC																			
			IEXOCXOPXCDiC																			
ContXEP																						
EPXIE																						
	IEXCont																					
I R D	ConhXCurso		X	X		X	X				X	X										
	CursoXR									X			X									X
	RXConh													X	X	X				X	X	

Figure 4 - Education Evaluation Framework Vs. CAPES Graduate Evaluation

Source: The authors