

# TEACHING AND LEARNING PRODUCTION AND OPERATIONS MANAGEMENT: the journey from identity crisis to a cross-disciplinary approach

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## RESUMO

Este artigo tem suas raízes em algumas questões relacionadas à “forma” e ao “conteúdo” do que nós, professores, ensinamos na área de Administração da Produção e Operações. Inicialmente, descrevo a evolução histórica desse campo no Brasil. Em seguida, discuto a crise de identidade que o campo está sofrendo. Com o objetivo de apresentar respostas para essa situação, apresento seis propostas para o desenvolvimento e consolidação do campo. Finalmente, descrevo uma iniciativa prática, envolvendo uma disciplina específica da área, ensinada para alunos de pós-graduação.

Essa iniciativa enfatiza a “dimensão do conteúdo” (de uma abordagem técnico-operacional para uma abordagem estratégico-gerencial) como também a “dimensão da forma” (do foco no ensino para o foco no aprendizado). O sucesso dessa experiência em curso confirma a coerência da agenda proposta e induz futuros aperfeiçoamentos.

## ABSTRACT

*This article has its roots in a number of issues concerning the “form” and “content” of what we, professors, teach in the area of Production and Operations Management (POM). First, I will describe the historical evolution of this field. Following, I will discuss the identity crisis that the field is undergoing. In an attempt to provide an answer to this situation, I will present six proposals for the development and consolidation of POM. Finally, I will describe a practical initiative, involving one specific POM discipline, taught to graduate students. This initiative emphasizes the “content dimension” (technical-operational approach to strategic-managerial approach), as well as the “form dimension” (focus on teaching to focus on learning). The success of this ongoing experience confirms that the proposed agenda is coherent and deserves further development.*

## PALAVRAS-CHAVE

Administração da Produção e Operações, aprendizado, ensino, educação em gestão, abordagem interdisciplinar.

## KEY WORDS

*Production and Operations Management, teaching, learning, management education, interdisciplinary approach.*

“At the age of six,  
I stopped my education to go to school.”  
Latin-American poet

“Everything I learned in life was in kindergarten.”  
Another poet

## INTRODUCTION

The experience of observing my 3-year-old daughter at kindergarten was notably disturbing to a business professor like me. In each minute of her day, I could see humor, fun, intelligence, and learning. Contrary to the first poet quoted above, my young daughter is a fortunate human being, who has been guided in her first steps by conscious teachers, with proper pedagogic methods. Compared to the sophistication (albeit, at first glance, one can only see simplicity) and shape of the kindergarten pedagogic methods, the methods we often apply in business schools might appear humble and anachronistic.

This article, written deliberately in the first person, singular form, arose from concerns with which the teaching profession is often faced. These concerns, shared by many colleagues, may be translated into the following questions: how relevant is what we teach? Are we making an actual contribution to the development of our pupils? Are the contents of our disciplines up-to-date? Are we in line with cutting-edge management theory and practice? And as for practice: are we successful in making pupils absorb the proposed material?

These questions, which should be of concern to any teacher, gain importance when they pertain to the field of Production and Operations Management (POM). This is due to the fact that the field has undergone deep changes in past decades and has recently suffered from an “identity crisis”. This can be seen from managerial practice, in which the relative advancement of the services industry over manufacturing activities translates itself into a loss of space and importance, which is felt by production managers. The crisis also impacts management schools, where traditional production management courses are often deemed anachronistic and, therefore, undervalued by students. The effects are also felt in the field of research, where papers on production management are usually late as compared to advances achieved in businesses.

Has our field failed in defining its own identity, which is capable of translating itself into a research and teaching agenda that is distinguished from those in other areas? Has it become a mere division of the more robust Management field? In view of these

concerns, the first fact to consider is that this “identity crisis” reflects more comprehensive changes that have taken place in the corporate world and in the field of Business Management, particularly in this past decade. The obvious consequence of these changes is the need to reassess professional profiles, research agendas, and the contents of courses.

Despite their importance, reflections on POM are rare, and the theme remains unexplored in Brazil, with a few exceptions (Silveira and Souza Pinto, 1997; Machline, 1994). Besides, most approaches are branded by their attachment to traditionalism.

The purpose of this text is to stimulate debate on the “identity crisis” of POM. I hope to contribute to overcoming this crisis and strengthening the field. Generally, I argue that our field should focus on achieving and consolidating the following transitions: (a) from technical-operating focus to strategic focus; (b) from manufacturing focus to value-network focus; (c) from production-oriented to services- and business-oriented; and (d) from disciplinary approach to cross-disciplinary approach. I also argue that our field should feature a close association with managerial practice, while still maintaining a critical attitude and an analytical posture; and that the roll of topics dealt with should be constantly subjected to updates, in such a manner as to support the above propositions.

The remainder of this article is structured as follows: section two contains a summary of the historical evolution of the POM field in Brazil; section three uses the identity concept to discuss the field’s crisis; section four offers proposals for development of the field; section five includes an exemplary case, the process of changing and improving a discipline taught at the graduate level; and section six offers a summary of the text, as well as suggestions for future initiatives and research.

## HISTORICAL EVOLUTION

Operations management has crossed several stages since its birth, in the early days of the past century, in association with scientific management. Despite constant evolution, two decades ago, POM was probably regarded as a well-defined field in term of theory and practice. On examining a teaching program or book (e.g. Monks, 1987), one would find “classical” themes such as: production planning and control, inventory control, quality control, and materials management. This would be closely reflected in managerial practice and in scholars’ research agendas.

In the 80’s and 90’s, however, the field underwent

considerable changes. In simple terms, one might say that this took place in two waves. The first of these relates to the quality movement and the “discovery” of new production management techniques, with heavy influence from the Japanese model. This first wave introduced new topics and dimensions into managerial practice, into the research agenda, and into the content of teaching courses in the field of POM. The second wave relates to deeper changes that have to do with the restructuring of production chains, including mergers, acquisitions, and privatization. It may also relate to the adoption of new structural forms or configurations and to the advancement of information technology, as applied to business management.

In an article published seven years ago, Machline (1994) evaluated the evolution of Production Management in Brazil. As a noteworthy observer, the author based his paper on a parallel between the industrialization process that took place in Brazil and the development of Production Management. In Brazil, industrialization gained considerable momentum in the periods that correspond to the two Great Wars – 1914-18 and 1939-45 –, as a result of the difficulties found in importing goods in the food products, textile, mechanical, steel, and chemical industries, among others. The focus of manufacturing leaders, whose education was usually at the technician level, was on technology, equipment, and production

volumes. The production management techniques available at the time – time and motion studies, quality inspection techniques, and maintenance methods – were, more often than not, ignored. Most businesses were too small and rudimentary to absorb such techniques. The exceptions were major domestic firms and a few multinational companies.

The dissemination of management concepts and practices gained speed from the 1950's onward, with the entry of the automotive industry and the creation of the first business management schools. Table 1 shows the introduction of principles, techniques, and methods, between 1957 and 1994, considering two periods.

However, as was noted in the beginning of this section, the greatest changes probably took place in the last decade. According to Bennet (1999), the greatest change driver was as a result of market conditions and the manner in which businesses started competing: a move occurred from the traditional focus, based on technology-oriented production systems, towards market-oriented systems. The old focus established that product and process technology were the essential factors for production strategy. This assumes that consumers are attracted by price and performance. Market orientation, on the other hand, comprises emphasis on both quality and performance, and on both consumer services and costs.

**Table 1 – Evolution of production management in Brazil**

Period	1957–1973	1974–1994
<b>Contextual features</b>	Prosperous global scenario Brazilian GNP growth Automotive industry entry Technological leap	Beginning of the influence of the “Japanese model” Dissemination of new production techniques Automation and computerization Business management sophistication
“Agenda”	<ul style="list-style-type: none"> <li>• Suppliers development</li> <li>• Statistical quality control</li> <li>• Costs control</li> <li>• Economic engineering</li> <li>• Project management</li> <li>• Inventories management and control</li> <li>• Human relations</li> <li>• Systems dynamics</li> <li>• Organization and methods</li> <li>• Industrial organization</li> </ul>	<ul style="list-style-type: none"> <li>• Quality control circles</li> <li>• Value analysis</li> <li>• Campaigns against waste</li> <li>• Red-tape decrease</li> <li>• MRP</li> <li>• JIT</li> <li>• CAD–CAE–CAM–CIM</li> <li>• Flexible manufacturing</li> <li>• Rapid machinery adjustment</li> <li>• Toyota production system</li> <li>• Manufacturing cells</li> <li>• Theory of constraints</li> <li>• Total Quality Control</li> <li>• ISO 9000</li> </ul>

Source: Machline (1994) (adapted).

For Bennet, this transition is at the root of the changes that took place in POM, which should include topics such as: (a) supply chain management, replacing a more restrictive production perspective; (b) integration of product and production, with increased sophistication of methodologies related to project management; (c) a search for more sophisticated organizational models, jointly with intensive use of technology; (d) organization of a service-oriented operation, including the just-in-time “philosophy”; (e)

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focus on the services industry, which has gained economic importance and is substantially different in terms of the managerial approach from production management; and (f) expansion of the quality concept, to comprehend consumers' perceptions of quality, in addition to the product's intrinsic quality.

The pictures provided by Machline (1994) and Bennet (1999) are supplementary. The former reveals the field's historic evolution. Though restricted to Brazil, it also applies to the broader context. The latter focuses on more recent changes – some of which had already been identified by Machline – and suggests future pathways. We shall return to this theme later in this text.

### CURRENT SITUATION

The current situation in the POM field may be defined as an “identity crisis”. I will base this section on the “metaphor of identity” to address the times this research, practice, and teaching field are going through.

Therefore, the section begins with a brief introduction to this concept.

The roots of the concept of identity are found in classical logic and philosophy. From this source, the notion became universal, gaining new meanings and applications as time went by (Caldas and Wood Jr., 1999). The most common usage pertains to the individual. Psychoanalyst Erick Erickson was responsible for introducing the expression “identity crisis” into the realm of behavioral sciences. Working in a rehabilitation clinic during W.W.II, Erickson and his colleagues noted that most of their patients had lost the sense of personal unity and historic continuity (Erickson, 1968, p. 17-19); they were experiencing an “identity crisis”.

From Erickson's notions about individual identity and the first studies on organizational culture and symbolism, some authors suggested that organizations also have identities. Noteworthy among these, is work by Albert and Whetten (1985), who proposed three criteria to define an organization's identity: organizational identity comprises the shared beliefs of their members about what is (a) **core**, (b) **distinctive**, and (c) **lasting** in the organization. Therefore, the concept may apply to both individuals and organizations. It may, consequently, be applied to the field of POM.

### “Traditional identity” and cross-disciplinarity

The POM identity may be deduced from definitions found in the books produced within the field. Monks (1987, p. 4) defines Production Management as “the activity by means of which resources, flowing within a defined system, are collected and transformed in an organized manner, so as to add value according to entrepreneurial purposes”. Note that this rather traditional definition pertains to production only and implies a close system.

Alternatively, Bennet (1999, p. 1) defines POM as “the management of business activities connected to the project, planning, and control of resources as regards the production of goods and the rendering of services”. Adding detail to the definition, the author stresses the following aspects: (a) POM involves not only daily operations, but the full product or service cycle. Therefore, it has an impact on all other functions: engineering, production, product development, finance, accounting, etc.; (b) POM involves management of all organizational factors, including supplies, human resources, and equipment, as well as intangible resources, such as know-how, skills, and competencies; and (c) POM involves both the production of physical goods and the rendering of services. This reflects the

evolution of business activities and the economy in the past decades and expands the field's scope.

By comparing these definitions, offered more than a decade apart, we may have a measure – however gross it may be – of the evolution of the field. The second proposition, which no doubt contributes to redefining the field's identity, also expresses a paradox, by mentioning the impact (one must assume there are interfaces) on other fields of knowledge. By expanding the scope from "production management" to "operations management", and accepting interaction with other fields, Bennet's (1999) definition establishes POM as a cross-disciplinary field. Firstly, because it involves not only production or operations, but also many other correlated activities. Secondly, because it is not restricted to the application of quantitative techniques, but comprises a wide spectrum of methods and approaches, many of which are shared with other fields.

Adding to the debate, Sower et al. (1997) argues that the greatest challenge facing the field's development is found precisely at this intrinsic trait: its high level of interaction with other fields. Such interfaces blur the boundaries of POM, creating confusion of the disciplinary source of theoretical models and analytical tools. We must, however, admit that this cross-disciplinary nature is unavoidable and cannot be dissociated from POM, though it may weaken the field's identity and also create superposition – not always cooperative – with other fields. So it is up to us to explore the possibilities and opportunities raised by this feature, without disregarding proper interface management and thereby avoiding, at one end, retreat to the previous identity, which is no longer of use, and on the other end, unchecked advancement into other areas of competence, which would definitely jeopardize POM as a field of study, research, and practice.

### **Identity crisis**

Let us now resume some other dimensions and facets of the identity crisis in POM. According to certain critics, POM was unable to develop its own body of literature, suffers from a lack of a distinctive intellectual structure, and can barely justify its own existence. For Pilkington and Liston-Heyes (1999), for example, POM has had trouble establishing itself as a discipline other than Operating Research, Industrial Engineering, and even Management.

Barman et al. (1991), to supplement this, suggests that this weakness is due to the competition between specialized periodicals and others with greater tradition and prestige. POM academics would thus be inclined to submit and publish their articles

outside of their field of expertise. This is especially critical in Anglo-Saxon countries such as the US and the UK, where business management academia features high institutionalization levels.

One last factor associated with the field's weakness is its close association with managerial practice. This causes theoretical achievements to follow practical innovation, branding the field as a follower of more innovative managers and a mere disseminator of best practices.

### **SIX PROPOSALS FOR THE NEW MILLENNIUM**

Up to this point of the article, I sought to outline a view of the POM field, presenting its historical evolution. I also discussed some dimensions and aspects of the current crisis. In this section, I intend to carry on with the debate, presenting some proposals for future discussion. The title of the section – borrowed from a famous book by Italo Calvino – may be a little pretentious. I indicate, however, that these are but preliminary proposals, pathways to be discussed, evaluated, and preserved, or discarded.

#### **Proposition 1: closeness with practice**

POM, as a research and teaching field, should confirm its calling for and historical tradition of closeness with management practice.

From the research standpoint, this means maintaining intimate associations with executives and businesses; building lasting relationships that may lead to gains for both sides. In the US, companies such as Intel, 3M, and Xerox have been maintaining partnerships with leading business schools. In Brazil, the recent creation of the Fórum de Inovação (Innovation Forum) at FGV/EAESP follows the same path. Answering this call also means adopting proper research methods, such as case studies and grounded research, in line with this reality. The researcher's role should be one of "analytical watcher", systematizing the observation of phenomena, understanding their meaning in a scale beyond individual businesses (and eventually, industrial sectors), generating theories, codifying knowledge, and disseminating it.

From the teaching perspective, this first proposition means a systematic effort to update contents, making sure that they reflect the field's rapid evolution. This means keeping close to innovative businesses and taking part in local and international debate forums, in addition to keeping up-to-date with academic production in the field.

On the other hand, this closeness with practice must be balanced. One needs to maintain a certain critical

distance from the professional manager's concrete practice and needs. In our field, we are well aware of the fact that it is impossible to build science in total isolation from concrete issues and without regard to managerial demands. On the other hand, we must admit that a critic's perspective must not be abandoned, thereby avoiding the risk of embracing each new managerial novelty that may arise, or yet, place ourselves at the service of businesses' immediate and specific needs (see Abrahamson, 1991; Bertero, Caldas and Wood Jr., 1998).

### **Proposition 2: strategic focus**

POM must complement and consolidate its transition from a technical-operating field to a strategic-tactical one.

In practical terms, this means: substantially decreasing emphasis on the field's technical-operating dimensions (for instance: facilities' layouts and sampling techniques) and raising emphasis on strategic-tactical ones (for instance: logistic network design and business performance monitoring).

### **Proposition 3: focus on the value network**

POM must complement and consolidate its transition from an internal focus to a focus on the value system.

This proposition arises from the realization of the breakdown of boundaries within and among businesses and the emergence of management as an activity that transcends hierarchical, departmental, business, and geographic frontiers (see Ashkenas et al., 1995). In practical terms, this means reducing emphasis on the internal dimensions of operations management and raising emphasis on external and relational ones. As has been known for a while, competition is no longer among companies, but among value networks or systems.

### **Proposition 4: services- and business-orientation**

POM must complement and consolidate its transition from focus on production to an expanded focus on services and business.

This proposal arises from the realization that the locus of competition has shifted from product to service (whether associated to a product or not) and is again in transition to a raised valuation of the business architecture, which represents an even broader perception of the value-generation process and carries even greater challenges for operations managers. In practice, this means reducing emphasis on dimensions connected to product and process technology and raising emphasis on dimensions that relate to services and business.

From the research perspective, this means focusing on value systems or networks. From the teaching perspective, it means instilling a generalist spirit in pupils, developing their ability to understand, analyze, and intervene into complex multi-business systems.

### **Proposition 5: expanded content**

In order to meet the needs posed by the above propositions, the content of POM must be updated.

The new agenda, outlined below, must provide guidance for both research and teaching, as is divided into five major perspectives:

- the **contextual perspective**, which seeks to relate structural and situational changes with changes in POM. This comprises a unique interpretation of economic, social, and technological variables, as well as the evolution of organizational models, both from an internal approach – cells, semi-autonomous groups, etc. – and from a multi-business view – networks, partnerships, etc.;
- the **strategic perspective**, which establishes the relationship between business strategy and operations strategy;
- the **perspective of competitiveness models**, which includes the several theories and concepts that have arisen in late years, such as lean production, theory of constraints, time-based competition, etc.;
- the **perspective of action methodologies**, which comprehends the several approaches aimed at organizational intervention, frequently derived from competitiveness models; and
- the **perspective of special themes**, comprising topics such as environmental management, ethics, and social responsibility, which are fundamental for professional upbringing.

### **Proposition 6: cross-disciplinarity**

To respond to the above proposals it is also necessary to consolidate the perception of POM as a cross-disciplinary field.

This proposal is not a finished solution and it must be taken into account the fact that to detail and implement it will be extremely difficult. At business schools, as in universities, a certain academic "tribementality" still reigns. Knowledge areas and departments, and their structural materiality, are veritable feuds, defending their domains and authority over knowledge. This is true of both highly institutionalized environments, such as the US academia, a knowledge-producing center, and environments where institutionalization is still embryonic, as is the case of the Brazilian academia, whose production is still marred by ill-informed

reproduction of what is done outside of the country (Bertero, Caldas and Wood Jr., 1999).

Anyway, as has already been mentioned in the previous section, the purpose here is not to break down frontiers and create a cross-disciplinary field, but rather to add permeability to these frontiers, so as to enable adequate cooperation levels among supplementary areas of expertise. In fact, it may appear paradoxical to watch barriers being torn down in business organizations while academia keeps up certain features of a highly orthodox, professional bureaucracy. Table 2 lists some topics I consider relevant to the POM agenda, and with which I seek to qualify certain interfaces with other fields of knowledge.

## THEORY IN PRACTICE

Up to this point, this text has been an attempt at a general debate on the current situation and future perspectives of the POM field. In this section, I will portray efforts to turn these notions into practice. These initiatives have occurred with more emphasis during the past two years and have involved the discipline of Operations and Technology Management (Gestão Operacional e Tecnológica (GOT)).

GOT is a discipline that integrates CEAG – Curso de Especialização em Administração para Graduados

(Graduate Business Management Specialization Course), one of Fundação Getulio Vargas's São Paulo Business School's most traditional and successful graduate courses. CEAG comprises 18 disciplines, with a total 480-hour course load, distributed across 5 semesters. Classes are at night and cater to a mid-level management executive public. Attendees' profiles vary, with relevant presence of engineers, economists, and business managers, often alumni of leading schools and universities. Ages range from 25 to 35, making CEAG a direct competitor of the executive MBA courses that flourish in Brazil.

### Historical evolution

In the 1980's, the content of disciplines related to POM at CEAG reflected a focus on production, and emphasis was on the technical and operational aspects. Examination of the summary of a popular book at the time – *Production Management*, by Joseph G. Monks (1987) – reveals the addressed topics: plant location, shop-floor lay-out, materials handling, inventory control, production planning, and control. In teaching terms, prelections prevailed, and case studies were few and far between.

In the 1990's, more substantial changes began to be introduced into the discipline, which was named GOT: firstly, content was modernized and began to

Table 2 – Some POM interfaces

Some POM agenda topics	Human resources	Strategy	Management	Marketing	Information technology
Operations strategy	Medium	Strong	Medium	Medium	Medium
Systems theory and complexity	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary
Value system or network	Weak	Strong	Strong	Medium	Medium
Quality (enhanced view)	Medium	Medium	Medium	Weak	Weak
Competitiveness models	Medium	Strong	Strong	Weak	Medium
Services management	Strong	Medium	Strong	Strong	Medium
Technological innovation	Strong	Strong	Strong	Weak	Strong
Enterprise systems (ERP)	Strong	Strong	Strong	Weak	Strong
Management innovation	Strong	Medium	Strong	Weak	Medium
Knowledge management	Strong	Weak	Medium	Weak	Strong
Logistics and supply chain management	Medium	Strong	Strong	Medium	Strong
Efficient consumer response	Medium	Strong	Strong	Medium	Strong
New organizational architecture	Strong	Medium	Strong	Weak	Medium
Environmental management	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary
Ethics and social responsibility	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary	Cross-disciplinary
Performance monitoring systems	Medium	Strong	Strong	Medium	Medium
"Non-traditional" operations: culture, sports, entertainment...	Strong	Medium	Medium	Medium	Weak

include themes connected to technology and services; secondly, traditional books began to give way to booklets comprised of articles from academic journals and business magazines; and thirdly, teaching methods changed substantially, with increased level of student participation in seminars, and subsequently, case studies, and group work.

### Current situation: content

In the first semester, 2000, a new series of changes was introduced as regards content. According to the program given to attendees, the discipline's goal was defined as follows (underline added to emphasize changes):

"In the past few years the Brazilian and global economies have undergone structural changes. A considerable part of these relates to deep changes in the value chains and value systems of all industrial segments. Mergers, acquisitions, and strategic alliances have been multiplying. In this context, updating operations management models gains importance, leading companies to implement change processes. The purpose of this discipline is to provide attendees with a systemic and strategic view of the business operations management theme, integrating several perspectives and topics. The discipline will approach topics that might be found in the agenda of a business operations executive, providing students with a broad, integrated, and critical view of what business operations management currently represents. The knowledge acquired should meet the objective of facilitating attendees' roles as leaders or team members in their organizations."

The program, implemented during 16, 100-minute sessions, is comprised of the following topics:

- Operations strategy
- Competitiveness models
- Managerial innovation in POM
- The impact of technology on POM
- Value system and value chain
- Integrated logistics
- Enterprise systems (Enterprise Resource Planning)
- Performance assessment (Balanced Scorecard)
- Project management

As can be seen from both the goal and the content of the discipline, we sought to characterize the replacement of the technical-operating focus by the strategic-managerial focus.

### Current situation: form

In order to keep up with the changes in content, several teaching changes were introduced. These were based on debates among teachers of the discipline, new

practices arising from the International Teachers Program (a specialization course for Business Management professors) and books on management education (e.g. Silberman, 1996; Barnes et al., 1994; Reigeluth, 1983). A summary of the new "pedagogic model" was also included into the discipline's syllabus, in an effort to force students to make a commitment to the new practices from the very beginning (underline added to emphasize changes).

"The teaching resources used in this discipline focus on learning, not teaching. Active participation of students in all activities is therefore assumed. There will be emphasis on participative class activities: dynamics, discussions, text analysis, and group exercises. The classes will also include concept expositions by professors and speeches given by specialists. Course dynamics should benefit from the diversity that is a trait of CEAG classes, with students with different educational backgrounds and who operate in different areas of businesses from different industries and with different sizes."

A number of innovations were also introduced as regards pedagogy. The most relevant ones were:

- division of classes into 20- to 30-minute sessions
- alternating focus between teacher and students
- introduction of brief case studies to be read and discussed in class
- introduction of decision-making exercises (role playing)
- introduction of several techniques to stimulate debate among the professor and students
- previous reading of theoretical literature, with submission of synopsis
- exposition of practical cases by student groups to illustrate theoretical texts
- closing the course with a "business game", to replace submission of term papers, introducing a playful element into the learning experience
- use of the Internet to access class materials such as slides, booklets, etc.
- use of e-mail for notices, news on the discipline, and general communication

### Paths into evolution

In general, the changes made were very well regarded. This may be seen from the rise in the level of student's participation and involvement. The reflections of this is proven by intermediate evaluations, with average level raising from 82% to 89%, which probably puts the discipline in the upper quartile, among the best evaluated at CEAG.

On the other hand, some challenges remain to be overcome: firstly, how to balance breadth and depth,

providing students with a view that is both broad and consistent with the themes addressed; secondly, how to properly track subject renewal rate; thirdly, how to separate new ideas and theories from managerial fads; fourthly, how to manage interfaces with other disciplines. In addition, from the teaching perspective, the greatest challenge still is how to increase student participation levels, stimulating their commitment as subjects of the learning experience.

## CONCLUSION

This article arose from a series of issues regarding the content and form of what we teach in the field of POM. Initially, I described the historical evolution of the field, showing the substantial changes in content. I subsequently discussed the field's current crisis starting from the concept of identity. In response to this crisis, I presented some propositions aimed at developing and consolidating the field. As I noted before, this is just a starting point for future discussion. Finally, I described the experience had in "reforming" GOT, with emphasis on both content and pedagogic aspects. As regards the content dimension, the main change was the replacement of the technical-operational focus with a strategic-managerial one. As regards the pedagogic dimension, the main change was the passage from a model revolving on teaching (focused on the teacher) to another that is based on learning (focused on the

student). The success of this yet to be concluded experiment leads one to believe that the ideas adopted are consistent and deserve improvement.

I believe that the theme dealt with here deserves exploration and deeper examination. Therefore, I point out below some aspects that will require the future attention of researchers and professors.

First, as regards the identity of the field of POM, I believe that the issue is far from settled. No doubt, new research on the dimensions presented above will be welcome. In addition, one might reflect in greater detail on mechanisms to promote consolidation of the field.

Second, as regards teaching, it seems to me that there is an urgent need to reform the contents of production management courses. Even though no attempt was made in the realm of this study to raise detailed information, anecdotal evidence indicates that our syllabi are severely outdated.

Third, as regards research, it appears desirable to stimulate reflection on new lines of research. In fact, based on recent minutes of the ENANPAD – probably the main outlet for dissemination of our production in the field of POM in Brazil – one may see that the propositions made here are also to be found there. There are numerous papers on themes, such as the connection between business strategy and operations strategy, and studies dealing with the restructuring of value systems. The goal is, therefore, to consolidate this trend and promote quality in research. ○

## REFERENCES

- ABRAHAMSON, E. Managerial fads and fashions: the diffusion and rejection of innovations. *Academy of Management Review*, v. 16, n. 3, p. 586-612, July 1991.
- ALBERT, S., WHETTEN, D. A. Organizational identity. In: CUMMINGS, L. L., STAW, B. M. (Eds.). *Research in Organizational Behavior*. Greenwich, CT: JAI Press, 1985. V. 7, p. 263-295.
- ASHKENAS, R. et al. *The boundaryless organization: breaking the chains of organizational structure*. San Francisco : Jossey-Bass, 1995.
- BARMAN, S. et al. An empirical assessment of the perceived relevance and quality of POM-related journals by academicians. *Journal of Operations Management*, v. 10, n. 2, p. 194-212, 1991.
- BARNES, L. B. et al. *Teaching and the case method*. Boston : Harvard Business School Press, 1994.
- BENNET, D. Operations management: where have we been and where are we going? *Operations & Production*, ABI/Proquest, 1999.
- BERTERO, C. O., CALDAS, M. P., WOOD JR., T. Produção científica em Administração de Empresas: provocações, insinuações e contribuições para um debate local. *Revista de Administração Contemporânea*, v. 3, n. 1, p. 147-178, jan./abr. 1999.
- CALDAS, M. P., WOOD JR., T. Identidade organizacional. In: CALDAS, M. P., WOOD JR., T. *Transformação e realidade organizacional*. São Paulo : Atlas, 1999.
- ERICKSON, E. *Identity, youth and crisis*. New York : W. W. Norton & Company, 1968.
- MACHLINE, C. Evolução da Administração da Produção no Brasil. *RAE - Revista de Administração de Empresas*, v. 34, n. 3, p. 91-101, maio/jun. 1994.
- MONKS, J. G. *Administração da produção*. São Paulo : McGraw-Hill, 1987.
- PILKINGTON, A., LISTON-HEYES, C. Is production and operations management a discipline? A citation/co-citation study. *International Journal of Operations & Production Management*, v. 19, n. 1, p. 7-20, 1999.
- REIGELUTH, C. M. Instructional design: What is it and why is it? In: REIGELUTH, C. M. (Ed.). *Instructional design theories and models: an overview of their current status*. Hillsdale, NJ : Lawrence Erlbaum Associates, 1983.
- SILBERMAN, M. *Active learning*. Boston : Allen and Bacon, 1996.
- SILVEIRA, A., SOUZA PINTO, M. D. Administração da produção: análise de citação. In: ENCONTRO NACIONAL DA ASSOCIAÇÃO NACIONAL DOS PROGRAMAS DE PÓS-GRADUAÇÃO EM ADMINISTRAÇÃO, 21., 1997, Angra dos Reis. *Anais... Angra dos Reis* : ANPAD, 1997. CD-ROM.
- SOWER, V. et al. Classics in production and operations management. *International Journal of Operations & Production Management*, v. 17, n. 1, p. 15-28, 1997.

## NOTES

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