



Alternatives for Certification Implementing of the Academic Process of HEIs*

Kenia Kodel Cox¹  <https://orcid.org/0000-0002-0261-4618>

Robelius De-Bortoli²  <http://orcid.org/0000-0003-1231-6451>

^{1,2} Universidade Federal de Sergipe

ABSTRACT

The universe of competition that today corresponds to the surroundings of HEIs requires obtaining profits from both tangible and intangible assets and improving the processes that permeate it, such as the academic. In this work, it is considered that certification, by validating the quality of products and services, possibly attesting to technological innovations and causing expansion of organizational reputation, has as a requirement the need to improve the processes of organizations that seek it. The certification that involves staff training is carried out mainly through the analysis of documents, written and practical exams and may result in the harmony between professional goals and the new demands of the world of work, whether: economic, innovation and consumer protection. The objective of this work is to identify alternatives for certification in the academic process of HEIs, based on the understanding of the effective objects of certifications that include professional training, the objectives pursued in these and the materiality of the evaluations involved. As a research methodology, a quasi-systematic review was applied considering the following guiding questions: 'what to certify', 'how to certify' and 'why to certify', from the analysis of which it was concluded that they are certification alternatives: to validate if practices and knowledge worked in HEIs remains guided by contemporary sciences and technologies, to encourage the competence of continuous learning in academic actors, to approach the relationship between university and society, as well as contact with graduates, to identify certification demands and adopt monitoring indicators continuous improvement of its human capital.

KEYWORDS

Skills. Skills development. Educational administration. Higher education. Vocational education. Competition.

Corresponding to Author

¹ Kenia Kodel Cox

E-mail: kenia@dcomp.ufs.br

Universidade Federal de Sergipe

São Cristóvão, SE, Brasil

CV Lattes

<http://lattes.cnpq.br/7139666952163615>

Submitted: 13 Sep 2020

Accepted: 11 Nov 2021

Published: 21 Jan 2022

 [10.20396/riesup.v8i0.8661211](https://doi.org/10.20396/riesup.v8i0.8661211)

e-location: e022030

ISSN 2446-9424

Anti-plagiarism Check



Distributed under



* Texto traduzido por Silvia Iacovacci. Graduada em Secretariado Bilingue e Tradução/Inglês Comercial – Instituto Roberto Schumann – Roma, Itália. E-mail de contato: siacovacci@gmail.com ORCID: <https://orcid.org/0000-0003-4499-0766>

Alternativas para Implementação de Certificação do Processo Acadêmico das IESs

RESUMO

O universo de competição que hoje corresponde ao entorno das IESs requer a obtenção de lucro tanto de ativos tangíveis quanto de intangíveis e o aprimoramento dos processos que o permeiam, como o acadêmico. Neste trabalho considera-se que a certificação, por validar a qualidade de produtos e serviços, por possivelmente atestar inovações tecnológicas e por causar expansão da reputação organizacional, tem como requisito a necessidade de aprimorar os processos das organizações que a buscam. A certificação que envolve formação de pessoal é efetuada principalmente por análise de documentos, exames escritos e práticos e pode ter como consequência a sintonia entre objetivos profissionais e as novas demandas do mundo do trabalho, sejam: econômicas, de inovação e de proteção ao consumidor. É objetivo deste trabalho identificar alternativas de certificação do processo acadêmico das IESs, a partir da compreensão dos objetos efetivos das certificações que englobam formação profissional, dos objetivos almejados nestes e da materialidade das avaliações envolvidas. Como metodologia de pesquisa foi aplicada revisão *quasi*-sistemática considerando como questões norteadoras: 'o que certificar', 'como certificar' e 'para que certificar', a partir da análise das quais concluiu-se que são alternativas de certificação: validar se práticas e conhecimentos trabalhados nas IESs mantêm-se balizados por ciências e tecnologias contemporâneas, estimular a competência de aprender continuamente nos atores acadêmicos, aproximar a relação universidade e sociedade, bem como o contato com os egressos, para identificar demandas de certificações e adotar indicadores de monitoramento do aprimoramento contínuo de seu capital humano.

PALAVRAS-CHAVE

Certificação de competências. Processo. Ensino superior. Formação profissional. Competitividade.

Alternativas para Implementar la Certificación del Proceso Académico de las IESs

RESUMEN

El universo de competencia que hoy corresponde al entorno de las IES requiere obtener ganancias tanto de activos tangibles como intangibles y mejorar los procesos que lo permean, como el académico. En este trabajo, se considera que la certificación, al validar la calidad de los productos y servicios, posiblemente asegurar innovaciones tecnológicas y provocando expansión de la reputación organizacional, tiene como requisito la necesidad de mejorar los procesos de las organizaciones que la buscan. La certificación que implica la formación del personal se realiza principalmente a través del análisis de documentos, exámenes escritos y prácticos y puede resultar en la armonía entre los objetivos profesionales y las nuevas exigencias del mundo laboral, ya sean económicas, de innovación y de protección al consumidor. El objetivo de este trabajo es identificar alternativas de certificación en el proceso académico de las IES, a partir del entendimiento de los objetos efectivos de las certificaciones que incluyen la formación profesional, los objetivos que se persiguen en estas y la materialidad de las evaluaciones involucradas. Como metodología de investigación se aplicó una revisión cuasi-sistemática considerando las siguientes preguntas orientadoras: 'qué certificar', 'cómo certificar' y 'por qué certificar', de cuyo análisis se concluyó que son alternativas de certificación: validar si prácticas y conocimientos trabajados en las IES se mantiene guiadas por las ciencias y tecnologías contemporáneas, además fomentar la competencia del aprendizaje continuo en los actores académicos, y acercar la relación universidad-sociedad, así como mantener contacto con egresados, para identificar demandas de certificación y adoptar indicadores de seguimiento mejora continua de su capital humano.

PALABRAS CLAVE

Habilidades. Desarrollo de las habilidades. Administración de la educación. Enseñanza superior. Enseñanza profesional. Competición.

Introduction

The success in obtaining tangible or intangible profit, to maintain the competitiveness of Higher Education Institutions (HEIs) in the universe where they are inserted, implies the need for improvement of the multiple processes present in these, according to Emiliani (2005); Sunder (2017) and Mahalingam (2017). Through the academic process, composed of rules, inputs, tasks, resources, and outputs, according to the Supplier, Input, Process, Outputs, and Customer (SIPOC) approach, proposed by ABPMB (2013), the Association of Business Process Management Professionals International, it is possible to increase the effectiveness of training in higher education.

On the other hand, to improve processes, especially personnel training, according to Longaraya and Ensslin (2014), Regueras *et al.* (2019), Gerasken and Kosilov (2017), Bregman and Molina (2017), and López (2014), is the certification - issued by an independent organization and area representative that serves as proof, through evaluation, if a service or product meets previously defined quality requirements.

This, according to Bertrand (2005), can be explained by multiple reasons, such as the need to evaluate the effectiveness of training systems, to align the objectives of the professions with the new demands of the world of work, and therefore with those of the economy, innovation, development, and consumer protection.

An example of a quality standard is the ISO 9001 that can result in certification with worldwide recognition, synonymous with a reputation in the market, in addition, the normative body National Institute of Metrology, Quality, and Technology (INMETRO), for certification of Brazilian services, such as those of vocational training, aimed at strengthening national companies, increasing their productivity through the adoption of mechanisms aimed at the quality of products, in addition to services, as well as through support for the development of technological innovations, according to Brazil (2011).

In addition, development agencies adopt the encouragement of critical thinking, culture of adaptation and continuous improvement encourages innovation, and recognizes that the only failure lies in the inability to learn, according to the (OECD) Organization for Economic Cooperation and Development (OECD, 2015).

Thus, for the certification that involves the training of professionals, the verification of the requirements, also called conformity assessment, involves theoretical and practical examinations, document analysis, of the know-how - skills, of the domain of knowledge and the competencies built for the exercise of professions or functions, and, possibly, schooling, internships, and others (INMETRO, 2020).

Also, professional certification can serve workers who seek formal recognition of knowledge, knowledge and professional skills developed in non-formal learning processes and in the trajectory of life and work, according to the National Network of Professional

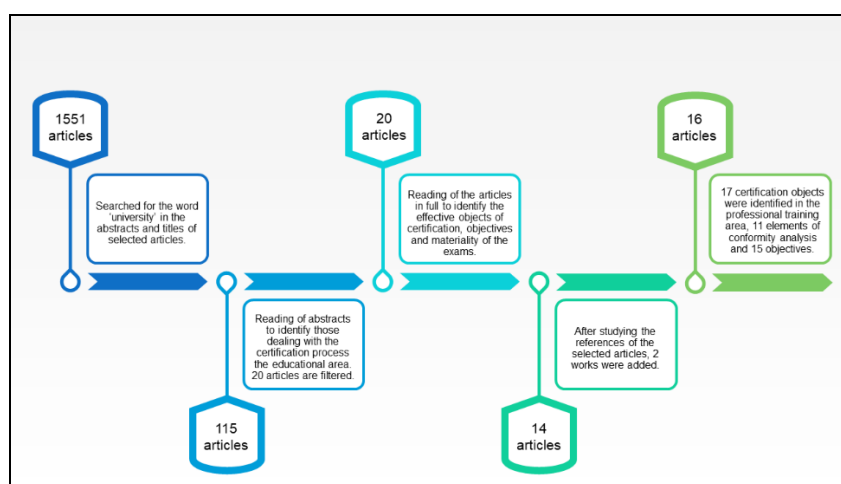
Certification, Brazil (2014), as well as the development of vocational training itineraries and methodologies for identification, evaluation and recognition of knowledge, knowledge and skills necessary for further studies or professional practice; promotion of social inclusion and production, fostering, insertion, permanence and progression in the world of work and education and articulation with public policies for employment, work and income (BRASIL, 2014).

Thus, the multiplicity of variables that can make up certification and the possibilities for its implementation in a process are undeniable, and they can define tasks and resources, as well as enhance the quality of the results. The objective of this study is to identify alternatives for implementing certification in the academic process of HEIs, based on an understanding of the effective objects of certification - "what to certify", the objectives pursued in it - "what to certify for", and the materiality of the exams involved - "how to certify".

Method

The research began with data collection by searching for the expression 'certification' in the abstracts and titles of peer-reviewed articles in the scientific database Scopus in May 2020, with a time scope of 2000 to 2020, written in Portuguese, English, or Spanish. 1,551 records were initially identified (Figure 1).

Figure 1. Methodological Path Adopted, with Subsequent Refinements



Source: The authors, 2020.

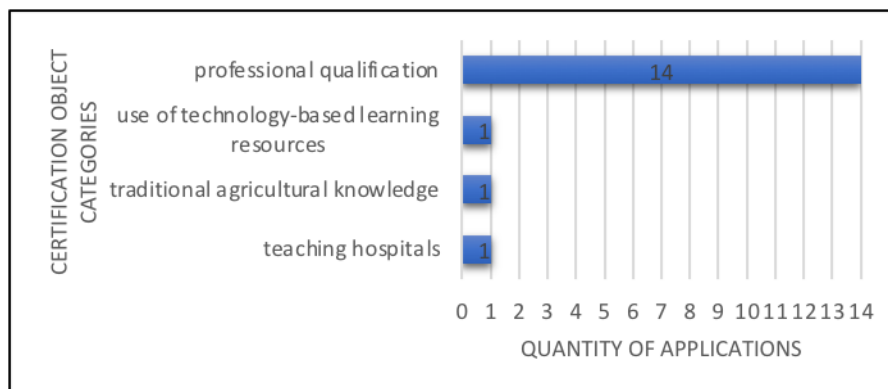
Based on the articles resulting from the initial selection, a new filter was applied by searching for the word "university" in their abstracts and titles, with resources made available by the platform, and 1436 articles were removed. Next, the abstracts of the filtered articles were read to select those that dealt with certification in the educational area, whether private or public, leaving a total of 20.

After reading the articles in their entirety to identify the certification objects, the intended objectives, and the materiality used in the conformity analysis, 6 articles were removed, leaving 14 articles. After studying the references of the selected articles, 2 papers were added.

Results

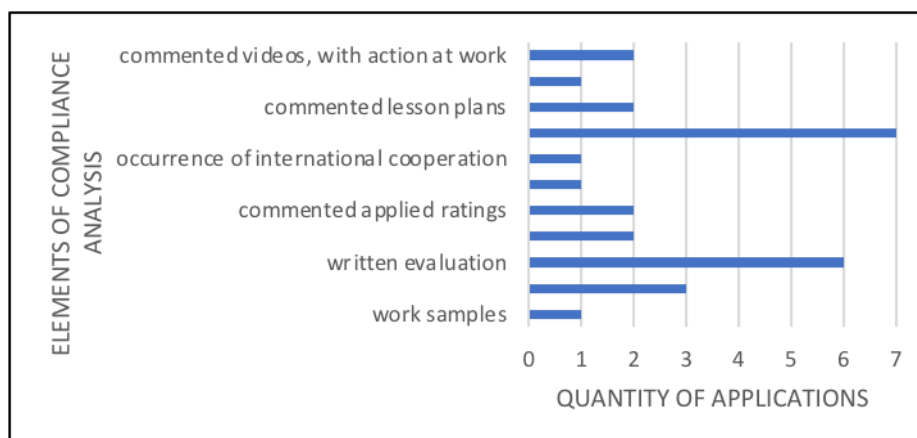
17 objects - 'what to certify', of certification in the area of education were identified: 14 for vocational training, 1 for the use of technology-based learning resources, 1 for traditional knowledge, and 1 for teaching hospitals (Graph 1).

Graph 1. Certification Objects



Source: The authors, 2020.

Graph 2. Materiality of Compliance Analysis of Certifications



Source: The authors, 2020.

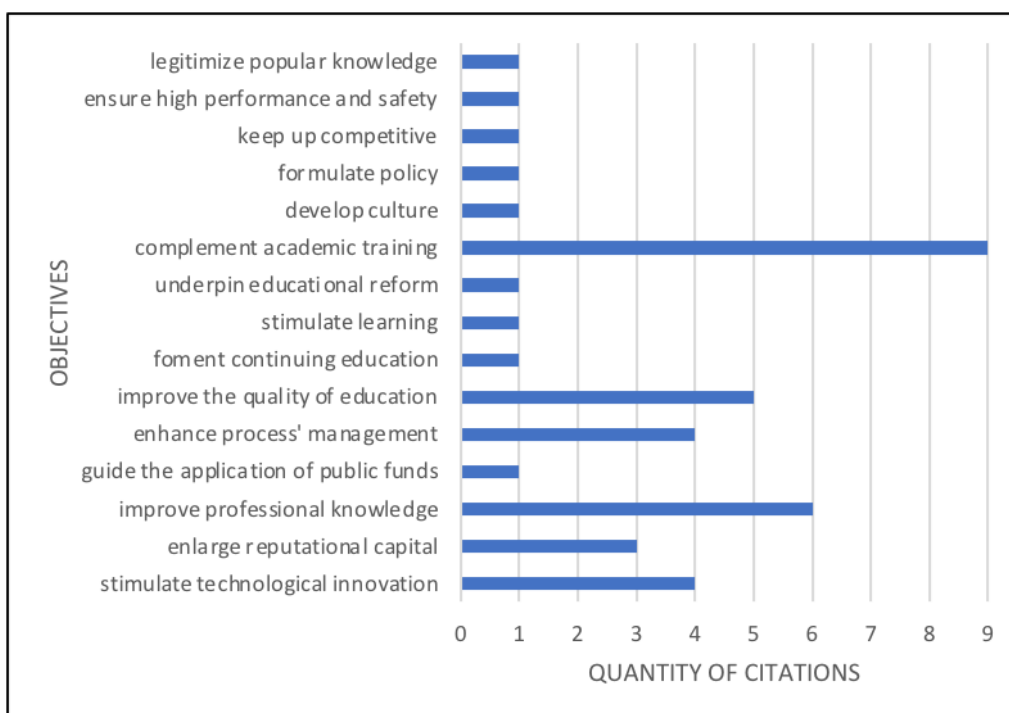
The above mentioned elements were applied 28 times in total, because there are certifications that, for compliance analysis, consider more than one element. An example is the certification in Neuropsychology that applies: training, oral and written assessments (Table 1).

Table 1. Materiality of the Analysis according to Objects of Certifications

Certification Objects	Materiality of Analysis' Conformity										
	Setting Goals	International Cooperation	Participation in Training	Commented Lesson Plans ¹	Commented Applied Ratings ¹	Sample Work	Workplace Analysis	Written Evaluation	Oral Evaluation	Videos With Work Tasks ¹	Research Conduct
Anesthesia Specialist			X								
Teacher Licensing - USA Pearson Education				X	X			X		X	
Teacher Licensing - USA NBC				X	X			X		X	
Neuropsychology Training			X					X	X		
Librarian Training			X								
Teachers Licensing – Turkey			X								
Specialist in Palliative Medicine		X	X								X
Nuclear Knowledge Management Course			X								
Electrical Engineer Training								X			
Psychology Training							X	X			
Training in Pediatrics			X			X		X	X		
Use of LMS							X				
Traditional Agricultural Knowledge							X				
University Hospitals	X										

¹Specific Undergraduate Courses, and together with other materializations make up the Portfolio.
Source: The authors, 2020.

A total of 15 objectives, to be achieved through certification, were cited in the corpus of articles in this research (Graph 3).

Graph 3. Target Goals of the Certifications Under Study

Source: The authors, 2020.

Here it is necessary to distinguish between complementing academic training - corresponding to graduate courses, for example; and improving professional knowledge - related to training to tune the performance of a professional to new demands of the labor world.

In the analysis of the articles, 40 citations to objectives were identified, with there being objects of certifications with more than one objective (Table 2).

Table 2. Objectives according to Certification Objects

Certification Objectives	Certification Objectives													
	Anesthesia Specialist	Teacher Licensing - USA NBC	Neuropsychology Training	Librarian Training	Teachers Licensing – Turkey	Specialist in Palliative Medicine	Nuclear Knowledge Management Course	Electrical Engineer Training	Psychology Training	Training in Pediatrics	Use of LMS	Traditional Agricultural Knowledge	University Hospitals	Teacher Licensing - USA – Pearson Education
Stimulating Technological Innovation				X		X		X					X	
Enlarge Reputational Capital			X						X	X				
Complement Academic Training	X	X			X	X		X	X	X			X	X
Improve Professional Knowledge			X	X			X				X	X	X	
Guide the Application of Public Funds													X	
Enhance Process' Management							X		X		X		X	
Improve The Quality Of Education		X						X	X				X	X
Foment Continuing Education			X											
Stimulate Learning											X			
Underpin Educational Reform		X												
Develop Culture						X								
Formulate Policy						X								
Keep Up Competitive							X							
Ensure High Performance and Safety							X							
Legitimize Popular Knowledge												X		

Source: The authors, 2020.

The UHs are associated with 'complementing academic training' and 'enhancing professional knowledge' because the certification in these is by means of goals, among which are academic training for medical professionals; and enhancement for managers.

Discussion

Certifications aim to validate whether products and services are suitable for a market where uncertainties and novelties predominate, which requires flexibility in technology and results, as well as improved processes; therefore, there are no single certification objects, nor single perspectives.

According to Jonker *et al.* (2017), postgraduate anesthesia training in Europe in most countries remains knowledge-focused with time-based learning; but the intention is observed to evolve towards competency-oriented learning, although it still corresponds to the smallest number of initiatives.

The NBC (National Board Certification) certification of US undergraduate degrees was analyzed from the perspective of its impact on student learning and the findings of Petty, Good and Handler (2016) is that it by no means confirmed the expected positive outcomes, but certified teachers reported increased understanding of their students, in their reflection and analysis of their teaching, leading to data-driven decision making in efforts to improve teaching methods.

Pearson Education's US licensure certification, on the other hand, was presented from the perspective of the prospective teachers' supervisors, who concluded that they seemed to be helping student-teachers win a race and earn the certification award; which seemed far removed from the perspective of professionalization - with outcomes defined primarily in terms of job performance (DONOVAN; CANNON, 2018).

Certification for Librarians is considered vital by Guo, Qinling, and Lu (2014) due to the urgent need for innovation in library service models, incorporating Information and Communication Technologies (ICTs) and consequent new forms of research, requiring the enhancement of librarians' capabilities.

Turkey's teacher certification was analyzed for the causes of teaching methods that encourage student cooperation - part of the pedagogical certification program applied in the country, according to Çolak (2015). The author points out the need for increasing the options of teaching techniques and their training time.

Regarding certification in palliative medicine, Bolognesi *et al.* (2013) clarifies that it is an ongoing process in Europe. In Italy, according to the author, there is a need for certified professionals in approximately 450 healthcare units; and there are initiatives aimed at developing the culture of palliative medicine as a discipline in HEIs.

The certification in 'Nuclear Knowledge Management', Geraskin and Kosilov (2017) explain, corresponds to an advanced training course, targeting nuclear industry specialists. For the certification of the electrical engineer, Ali *et al.* (2018) understand as necessary to integrate learning, assessment system and learning outcomes. In Chile, according to López (2014), there are three ways to obtain certification in Pediatrics: passing a graduate program, meeting the requirements for training in practice for 5 years, or having been a supervisor.

On the other hand, the certification in HUs, according to Longaraya and Ensslin (2014), was carried out through goals, among which there are 3 that focus on professional training: activities to improve hospital management, education in HUs, and research; this is because the authors clarify that it is necessary to adopt new models of management, teaching, and assistance to align teaching hospitals with the hiring process of the Brazilian Unified Health System (SUS).

Thus, it is observed that there are points considered negative, which can serve as warnings: possibility of distancing from professionalization, time-based learning to the detriment of that which is oriented to competencies and skills, lack of techniques and the time required for the desired training, inadequate integration between learning, assessment and feedback. Practice training can broaden the possibilities of forms of training contemplated in certification processes, and compliance with legislation is something that must not be lost sight of in staff training processes.

They can delineate 'what to certify' in the academic process of HEIs, by having aspects in common with higher education, or by the positive results: the focus on competencies, as occurs in post-graduation in Anesthesia and the training of Librarians, the search for an increase in student understanding and faculty reflection based on the analysis of their actions, considering decisions based on data, according to NBC certification, development of culture as in certification in Palliative Medicine and in HUs and adoption of new management models as proposed for teaching hospitals.

Thus, 'what to certify in academic processes' stands out: students' competencies, skills and understanding, critical analysis of teachers' actions, a culture of process implementation and management model.

How to do the Academic Process Certification

There was a predominance of participation in capacity building or training, written evaluation, and on-the-job analysis. The certification provided by the US perpetual education reform - NBC, involves the analysis of video containing teaching practice supplemented by critical analysis, samples of student work containing complementary teaching comments (PETTY; GOOD; HANDLER, 2016). Whereas in the Neuropsychology training certification, according to Denney (2010), there is critical review of work samples.

The theoretical assessment is applied in 6 professional training studied, from Pediatrics (LÓPEZ, 2014), from Psychology (BREGMAN; MOLINA, 2017), from Electrical Engineer (ALI *et al.*, 2018), from Neuropsychology (DENNEY, 2010), 2 from US teacher (PETTY; GOOD; HANDLER, 2016 and DONOVAN; CONNAN, 2018). According to Denney (2010), for certification in Neuropsychology, in addition to the written exam, there is also an oral exam and training; and the exams explore the content of the field, ethics, and therapeutic skills.

Practical exams were called 'on-the-job analysis' in the present study, and were noted as materiality for compliance analysis in 3 articles: focused on professional training in Psychology (BREGMAN; MOLINA, 2017), of use of technology-based learning resources (REGUERAS *et al.* 2019), for traditional agricultural knowledge (LOBO; RIVAS, 2016).

Regueras *et al.* (2019) explain that there has been a growth in the application of Learning Management Systems (LMS) in higher education, aimed at complementing face-to-face classes and favoring student learning, and that faculty members have been requesting certification of the use of technology-based learning resources from HEIs.

For librarian training, Guo, Qinling, and Lu (2014) clarify that the training included innovative classroom practices, case studies, collective analyses, presentation of observations on in-service experiences, and interactive procedures through communication platform; with 97.85% satisfaction rating.

Regarding training in Pediatrics, López (2014) explains that of the three ways to obtain certification, already mentioned, training is performed by 57% of candidates.

According to Donovan and Cannon (2018), teachers who obtain Pearson Education certification have a perception that they perform well, signaling that the training has ensured proficient teaching not limited to a certificate, ensuring employability, and also advantageous results - reputational capital, for the college of education, which has demonstrated its effectiveness.

Regarding assessment, Jonker *et al.* (2017) explains that competency and outcome-based training simultaneously triggered changes in assessment methods, which began to apply a greater variety of tools, case-based discussions, simulation, and workplace assessments.

Workplace analysis was applied to legitimize traditional agricultural knowledge, in psychology training, and certification of LMS use.

About evaluation there is also a proposal for periodic analysis, applying mechanisms with analysis of indicators for monitoring the development of institutional projects, to provide permanent feedback to formulate the expansion of benefits for students and teachers (BREGMAN; MOLINA, 2017).

And there is also the proposal of self-assessment since NBC certification has led many of the student-teachers to make critical analyses about the connection between their practices and student learning (PETTY; GOOD; HANDLER, 2016).

In the study by Regueras *et al.* (2019), although the certification is for the use of a management system, it refers to professional education because it is closely related to the alignment between professionals' practice to the demands of the world of work. This

alignment is also addressed by López (2014) when presenting the justifications for having recertification in the field of Pediatrics, pointing out the continuous advancement of medical knowledge and practices and the speed with which knowledge becomes obsolete.

To highlight 'how to certify' the academic process of HEIs, the same selection criteria of 'what to certify' were applied, that is, by presenting points in common with the context of the HEI, or by the positive results. Thus, besides considering the training in Anesthesia, Librarian, NBC Certificates, Palliative Medicine and HUs, from the previous section, the following are added: use of LMS, and training in Pediatrics.

Why Apply for Academic Process Certification

Certification in 'Nuclear Knowledge Management' aims to attest to building knowledge for high performance and safe operation of nuclear facilities, according to Geraskin and Kosilov (2017). According to Petty, Good, Handler (2016), a US commission on excellence in education identified almost forty years ago that the US was not seen first in trade, industry, science, and/or technology; they then concluded that if the quality of student performance was improved, the country could gain a global competitive advantage. To that end, a plan was devised to develop, retain, and reward talented teachers through teaching certification and to encourage college students to consider a teaching career.

Another situation of application of certifications in HEIs refers to that of university hospitals (HUs), implemented by the Ministry of Health (MH) in Brazil, through goals to be achieved in the financial, management and education areas, due to the delineation of a new relationship between the MH and the Ministry of Education (MEC) regarding the financing of HUs (LONGARAYA; ENSSLIN, 2014).

To apply certification to legitimizing traditional agricultural knowledge and bringing university and society closer together, Lobo and Rivas (2016) considered field practices carried out by agricultural producers, recorded through questionnaires; and seminars involving doctoral students. According to the authors, this initiative made it possible to produce scientific knowledge from solutions proposed by the local actors themselves, promoting territorial development.

Customer service was considered in the research of Regueras *et al.* (2019), Petty, Good and Handler, (2016), for turning to stimulate learning; in that of Geraskin and Kosilov (2017) for considering high performance and safe operation of nuclear facilities; and in that of Longaraya and Ensslin (2014) for formulating priority policy for SUS in HUs.

Denney (2010), who deals with training in Neuropsychology, corroborates with the theory proposed by Bertrand (2005) that certification stimulates continuing education. And, according to the same author, if it assumes that it enhances the knowledge and skill of the professional, then it is encouraged.

Improving management models is another goal of certifications, since scientific-technological advances, innovations, continuous demands of society, and obsolescence of knowledge imply the need for task improvement and adjustments of results in the implementation of academic processes, for example. They also considered this as an objective: university hospitals, licensing in Turkey, legitimizing popular knowledge of the agricultural environment and training in nuclear knowledge management.

In addition, there is the reputational capital that is indispensable for survival in the competitive universe of HEIs. Denney (2010) states that certification increases the public perception and the credibility of the area, as well as the personal growth of the professional when dealing with certification in Neuropsychology. Thus, the zeal for reputational capital is still reflected in professionals in training in HEIs.

As for the professional certification to stimulate abilities beyond the technical competencies, according to Bertrand (2005), such as those related to communicability and civility, no articles were identified among those studied; this objective may drive future actions of certifications in HEIs.

Thus, the objectives of the search for certification of the processes of academic HEIs are: to complement the academic education, to enhance professional knowledge, to improve the quality of education, to improve the management process, to stimulate technological innovation, among others.

Final Considerations

Training, a wide variety of assessment tools, portfolio, international cooperation, research, goal setting and workplace analysis correspond to the 'how to certify the academic process' according to this research. And there is a need for periodic analysis, applying indicators for monitoring the goals; considering the speed with which knowledge becomes obsolete.

Moreover, the analysis of the 'how to certify' highlights, besides training and theoretical assessment, also the observation of professional performance in the workplace, application of technological resources, implementation of innovative classes with case studies, collective analysis and improvement of assessment methods, as well as self-assessment and adoption of monitoring indicators.

As to the 'why certify' of HEI academic processes, this research identified the following: to complement academic education, to enhance professional knowledge, to improve the quality of education, to improve the management process, to stimulate technological innovation - ratified by 4 studies of this research, to expand the reputational capital - corroborated by 3 other studies, to remain competitive, to keep talents, to bring university-society closer, to serve the consumer, to adopt continuing professional education, to ensure the alignment between the practice of professionals to the demands of the world of work.

Thus, it is possible to conclude that the search for certification aims to ensure quality in products and services offered to the consumer. In the academic process, the latter corresponds to the student - directly involved, and to society - recipient of the products and services resulting from the graduates' professions. The quality search can leverage improved solutions, improved processes, lower costs, and thus lead to innovations. As a consequence, such improvements and refinements reflect positively on the reputation of organizations and on their ability to remain competitive.

This occurs because the complementation of academic training increases the chances of professionals to preserve their jobs. In addition, the dissemination and critical application of the progress of science and technology has as a consequence the change in the relationship between citizens and their environment, and as a requirement the improvement of education. From the university's perspective, talent is maintained, universities preserve their chances to innovate, maintain productivity, and offer quality services, due to the know-how that is preserved, in addition to increased possibilities of continuous improvement, with positive effects on competitiveness, which, in turn, is a matter of survival, given the scenario in which the HEIs find themselves - the market, whether public or private.

Therefore, the certifications of the academic processes must validate if practices and knowledge are guided by contemporary science and technology, as well as evaluate the stimulus to the learning competence to avoid obsolescence, and must have indicators for monitoring the continuous improvement of its human capital.

Another essential factor is the approximation between university and society to identify the demands and benefit society through the services that the HEIs can offer; which, in turn, guide the validation carried out for the certification of academic processes.

Damage to reputational capital can also occur, with a negative impact on the HEIs' ability to remain competitive if there is negligence in the certification of the student-consumer training or the customer-society service; as well as with the improvement of professional knowledge or continuing education that are indispensable for professionals to keep their jobs and their training in line with scientific and technological advances that occur after their training; and requires that in the academic processes there is room for contact with graduates. Avoiding these oversights is essential for the certification of the quality of the services and products that HEIs offer.

References

ABPMP - Association of Business Process Management Professionals. BPM CBOOK Versão 3.0 – **Guia para o Gerenciamento de Processos de Negócio Corpo Comum de Conhecimento**, Brasil. 2013. Available on: abmp-br.org. Access on: 18 may 2020.

ALI, Muhamad; LARAS, Dewi Larasati; ZAMTINAH; DJEMARI; SOENARTO, Sunarayo. Design of Electrical Engineer Profession Certification Model Based on Recognition of Prior Learning. **Journal of Physics: Conference Series**, v. 1140, n. 1. 2018. Available on: [012009.10.1088/1742-6596/1140/1/012009](https://doi.org/10.1088/1742-6596/1140/1/012009). Access on: 21 aug. 2020.

BERTRAND, Olivier. **Avaliação e certificação de competências e qualificações profissionais**. Título Original: Evaluación y certificación de competencias y calificaciones profesionales, UNESCO/ IPE, Brasilia. 2005. Access on: 21 aug. 2020.

BOLOGNESI, Deborah; BRIGHI, Nicole; MUCIARELLI Pier-Angelo; BIASCO Guido. Palliative care training and research: The development in Europe and the Bologna experience. **Indian J Palliat Care**, 2013, v. 19, n. 1, p. 20-36. Available on: <http://www.jpalliativecare.com/text.asp?2013/19/1/20/11022>. Access on: 20 aug. 2020.

BRASIL. **Lei 12.545, de 14 de dezembro de 2011**. Dispõe sobre o Fundo de Financiamento à Exportação (FFEX) e dá outras providências. Presidência da República, Casa Civil, Subchefia para Assuntos Jurídicos. [online] 2011. Available on: planalto.gov.br/ccivil_03/_Ato2011-2014/2011/Lei/L12545.htm#art11. Access on: 21 aug. 2020.

BRASIL. **Portaria Interministerial 5, de 25 de abril de 2014**. Dispõe sobre a reorganização da rede Nacional de Certificação Profissional – Rede Certific. Ministério da Educação. [online] 2014. [online] Available on: pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?jornal=1&pagina=14&data=02/05/2014. Access on: 26 aug. 2020.

BREGMAN, Claudia; MOLINA, Mario. Sistemas de acreditación, certificación y regulación del ejercicio de la psicología clínica en Argentina. **Terapia psicológica**, v. 35, n. 2, p. 195-202. 2017. Available on: scielo.conicyt.cl/pdf/terpsicol/v35n2/0716-6184-terpsicol-35-02-0195.pdf. Access on: 21 aug. 2020.

ÇOLAK, Esma. The effect of cooperative learning on the learning approaches of students with different learning styles. **Eurasian Journal of Educational Research**, v. 59, p.17-34. 2015. Eurasian Journal of Educational Research, 59, 17-34. Available on: dx.doi.org/10.14689/ejer.2015.59.2. Access on: 11 aug. 2020.

DENNEY, Robert. Authentic Professional Competence in Clinical Neuropsychology, **Archives of Clinical Neuropsychology**, v. 25, n. 5, p 457–467. 2010. Available on: [doi-org.ez20.periodicos.capes.gov.br/10.1093/arclin/acq046](http://doi.org.ez20.periodicos.capes.gov.br/10.1093/arclin/acq046). Access on: 10 aug. 2020.

DONOVAN, Martha; CANNON, Susan Ophelia. The university supervisor, edTPA, and the new making of the teacher. **Education Policy Analysis Archives**, v. 26, n.28. 2018. Available on: <http://dx.doi.org/10.14507/epaa.26.2849>. Access on: 20 aug. 2020.

EMILIANI. Using kaizen to improve graduate business school degree programs. **Quality Assurance in Education**, v. 13 n. 1, p. 37-52. 2005. Available on: emerald.ez20.periodicos.capes.gov.br/insight/content/doi/10.1108/09684880510578641/full/pdf?title=using-italickaizenitalic-to-improve-graduate-business-school-degree-programs. Access on: 12 may 2020.

GERASKIN; KOSILOV. Experience in implementation of Nuclear Knowledge Management course at the National Research Nuclear University MEPhI. **Journal of Physics: Conference Series**, 781(1), 012053. 2017. Available on: [doi:10.1088/1742-6596/781/1/012053](https://doi.org/10.1088/1742-6596/781/1/012053). Access on: 21 aug. 2020.

GUO, Jing; QINLING Huang; LU, Xiaobin. Design and Implementation of a Subject Librarian Training Program for University Libraries in China. **Reference & User Services**

Quarterly, v. 54, n. 2, p. 43–51. 2014. Available on: <http://dx.doi.org/10.14507/epaa.26.2849>. Access on: 20 aug. 2020.

INMETRO – Instituto Nacional de Metrologia, Qualidade e Tecnologia. **Avaliação da Conformidade: Certificação**. [online]. 2020. Available on: inmetro.gov.br/qualidade/certificacao.asp. Access on: 20 aug. 2020.

JONKER; MANDERS; MARTY; KALKMAN; ten CATE; van GESSEL; HOFF. Variations in assessment and certification in postgraduate anaesthesia training: a European survey. **British Journal of Anaesthesia**, v. 119, n. 5, p. 1009–1014. 2017. Available on: elsevier.com/locate/techfore. Access on: 20 aug. 2020.

LOBO, Ligia Natalie Garcia; RIVAS, José Daniel Anido. University functions as the basis for generating skills oriented to codifying local agricultural. **Acta Agron.**, v. 65, n. 1, p. 58-64. 2016. Available on: <https://doi.org/10.15446/acag.v65n1.47515>. Access on: 21 aug. 2020.

LONGARAYA, André Andrade; ENSSLIN, Leonardo. Uso da MCDA na identificação e mensuração da performance dos critérios para a certificação dos hospitais de ensino no âmbito do SUS. **Production**, v. 24, n. 1, p. 41-56, jan/mar. 2014. Available on: dx.doi.org/10.1590/S0103-6513201300500002. Access on: 19 aug. 2020.

LÓPEZ. Accreditation process of pediatric healthcare professionals in Chile. **Rev. chil. pediatr.**, v. 85, n. 5, p.5 99-607. 2014. Available on: <http://dx.doi.org/10.4067/S0370-41062014000500012>. Access on: 21 aug. 2020.

OECD – Organization for Economic Cooperation and Development **Avaliar as Atividades de Desenvolvimento: 12 Lições do CAD da OECD**. Título Original: Evaluating Development Activities, 12 Lessons from the OECD DAC. Camões, Instituto da Cooperação e da Língua. 2015. Available on: <http://search.oecd.org/dac/peer-reviews/Final-12-Lessons-portuguese.pdf>. Access on: 22 aug. 2020.

PETTY, Teresa; GOOD, Amy; HANDLER, Laura. Impact on student learning: National Board Certified Teachers’ perspectives. **Education Policy Analysis Archives**, v. 24, n. 49. 2019. Available on: <http://dx.doi.org/10.14507/epaa.24.2227>. Access on: 17 aug. 2020.

REGUERAS, Luisa; VERDÚ, Maria Jesús; De-CASTRO, Juan-Pablo; VERDÚ, Elena. Clustering Analysis for Automatic Certification of LMS Strategies in a University Virtual Campus. **IEEE Access**, p. 1-1. 2019. Available on: 10.1109/ACCESS.2019.2943212. Access on: 20 aug. 2020.

SUNDER, Vijaya; MAHALINGAM Sanjay. An empirical investigation of implementing Lean Six Sigma in Higher Education Institutions. **International Journal of Quality & Reliability Management**, v. 35, n. 10, p. 2157-2180. 2017. DOI 10.1108/IJQRM-05-2017-0098. Available on: emeraldinsight.com/0265-671X.htm. Access on: 02 may 2020.