

Modelo multidireccional para la innovación educativa en el diseño curricular

Multidirectional model for educational innovation in curricular design

¹Rodrigo Urcid-Puga**Susana Pérez Milicua-Mendoza****José Pablo Nuño-de la Parra**¹Tecnológico de Monterrey, Escuela de Humanidades y Educación, México

Universidad Popular Autónoma del Estado de Puebla, México

Correo(s) electrónico(s):

rurcid@itesm.mx

susana.perezmilicua@upaep.edu.mx

pablo.nuno@upaep.mx

Recibido: 12 de mayo de 2018

Aceptado: 20 de enero de 2019

Resumen: Se presenta un modelo que ejemplifica de manera gráfica la relevancia del cambio curricular para lograr la innovación académica con miras a la formación de mejores estudiantes. El objetivo es plantear una serie de sustentos teóricos que ayuden a fortalecer la idea de que el cambio de rigidez a flexibilidad es algo que las universidades deben considerar. Se utilizó una metodología cualitativa y de corte transversal. Como resultado se obtuvo un modelo que incluye diferentes ideas a favor del cambio y la innovación curricular.

Palabras clave: Innovación educativa; Modelo curricular; Aprendizaje activo; Diseño educativo

Abstract: The following article presents a model that graphically exemplifies the relevance of curricular change to achieve academic innovation with a view to training better students. The objective of this document is to propose a series of theoretical underpinnings that help strengthen the idea that the change from rigidity to flexibility is something that universities should consider. There is a qualitative and cross-sectional methodology. As a result, we obtain a model that includes different ideas in favor of change and curricular innovation.

Keywords: Educational innovation; Curriculum model; Active learning; Educational design

Introduction

The themes of educational innovation, curricular design and academic flexibility are not new; they date since education is established. The idea of promoting an academic education that transcends the classroom, which does not focus only on theoretical aspects, has changed over the years. Concretely, these changes are manifested from the curricular design and the planning of the study programs.

Society constitutes the general framework of education and, as a consequence of this, study plans must be established in a planned manner and with a view to a deeper treatment of the development of competences (Tobón, 2013). Thus, the permanent change is the only constant that must be present in the field of educational innovation within the Institutions of Higher Education (IES). (Canton, 2007)

Specifically, the contemporary ways of study in the field of curricular design indicate that it is best to have an integrating vision of the characteristics of the cultural environment of the regions, social needs, social relevance, scientific and disciplinary knowledge, national and international regulations, professional exercise, and humanistic foundation; therefore, the curricular design must be the subject of systematic study through research that contributes to a systematization and an increase in the level of awareness and examination by the actors engaged to the curricular construction of the academic programs. (Tovar and Sarmiento, 2011)

However, the curriculum per se can be conceptualized in many ways, some consider it a didactic concretion, others conceive it as an integrated and flexible project that must be modeled in concrete situations where, rather than the selective presentation of knowledge, understood as a framework in which specific problems have to be solved. (Vidal and Pernas, 2007)

Another approach to the curriculum mentions that this is a "systematized training project, shaped as a flexible and integrated process of contents and learning experiences that are articulated in the form of a political-educational proposal" (Vidal, 2007, p.56), which promotes higher education for various socioeconomic sectors that seek to produce meaningful and comprehensive learning

Thus, the new demands of innovation have to do with the complexity of everyday life, where elements are included in the teaching and learning process in order to improve the demands and pressures for future professionals. In this context, the faculty of the universities needs a series of resources and teaching strategies to improve the teaching and learning processes. (Brailovsky, 2011)

On the other hand, it is at a point where educational research is separated from problems and educational practice, that is, the design and teaching that implies the creation of educational plans capable of transforming the new generations and break rigid schemes. (Michel, 2013)

The science of educational design emerges as a novel paradigm for the study of learning through systematic design, and the study of strategies and teaching tools. (Candela, 2016)

Naturally, the line of research in the design of a curriculum can help to create and extend knowledge about the development, representation and sustainability of innovative learning environments (The Design-Based Research Collective, 2003), therefore, when talking about " educational design ", has to focus on developing and taking advantage of the greatest number of innovations that are documented by different theories.

In the same way, it is necessary to understand that the institutional curricular projects have as goal the concretion of the design, which must be initiated by the professors. Therefore, since its creation, it must be the basis for educational innovation, and the new curriculum must be based on social change to form a more collaborative community with a human sense capable of creating changes from different angles. (Canton, 2007)

When considering the above, it can be defined that the problem detected lies in the fact that HEIs must understand that part of educational innovation goes hand to hand with a curricular redesign that appeals to flexibility, and forgetting sequential and rigid plans. (Zabalza, 2012)

Added to this, the idea of university changes should not only be the consequence of legal elements in order to remain "current", but universities should bear in mind that adaptation to new learning and teaching processes is undeniable, above all, if one considers that academic models have been transformed abruptly.

The IES, through the curricular proposals, try to forge human resources to have a defined professional practice. However, many times, this is not usually linked to the problems of the majority groups in the country where they are developed. Thus, and in the hand of curricular design some authors mention that it is necessary to gather information from various sources, and even methodologies, example of which are surveys, interviews and indicators related to

the particular or specific to each discipline. Likewise, they ensure that teacher training in curricular aspects is essential, as this may allow their understanding. (Rodríguez, 2015)

Malagón (2009) describes the need for active participation of employers, associations, graduates, professors, researchers, and not only of teachers and institutional directives for the definition of important issues of HEIs and specifically curricular aspects, which ratify the results of this study.

On the other hand, participation usually takes the form of solving problems, despite the fact that many solutions cause more serious problems than they solve. However, effective participation lies fundamentally in reaching a common understanding of the problems. The solutions become more evident, have greater support, can be easily instrumented and do not generate, in general, unwanted repercussions. Creative participation highlights the detection, perception, formulation and common understanding of problems, not limited to their mere resolution. (Gvirtz, 2015)

Por ello, cuando se piensa en la innovación curricular, se tiene un reto fundamental: integrar, en la medida de lo posible, el conocimiento que va a adquirir/construir el estudiante y futuro profesional, y propiciar una formación teórica, metodológica, técnica y ética adecuada para la realización consciente, responsable y profesional. (De Alba, 2013)

It must also be considered that professional practice cannot be exempt from an ecological and environmental dimension; of an education regarding technology, human rights and values that, in one way or another, are the responsibility of all human beings. (Silva, 2016)

Thus, educational design as a research methodology goes beyond design and testing related to particular interventions. In general, these designs are based on a set of specific theoretical statements about the teaching and learning of a concept, in addition, reflect a commitment to understand the relationships that exist between theory, teaching material and design practice curricular and educational innovation.

Therefore, it is said that from this kind of research a set of theories about learning and teaching a specific content emerge, also called specific domain theories (Confrey, 2016). Finally, it must be understood that the lack of curricular coherence in the materials can

negatively affect the students' level of conceptual understanding of the science curriculum. (Candela, 2016)

Development

The learning environments in the school to be attractive to students must have a series of conditions, which go beyond the physical space, academic logistics, technological resources, and other elements that could strengthen the learning process. (Candela, 2016)

Thus, fundamental factors that include the motivation for new knowledge and academic results are closely related to the coherence of the curriculum in terms of sequencing the concepts that make up the great ideas of science, and the depth with which they are studied in and through of the degrees, in addition to the alignment in the learning goals in question. (Schmidt, Wang and McKnight, 2005)

It is necessary to mention that a curriculum can be conceived as the field of research and analysis of reality, which promotes "the generation of more consistent and coherent relationships between knowledge and the relevant actions for its social use" (Lozano and Lara, 2011, p.77). Studying them entails considering the context in which they are configured and through which their educational practices and their results are expressed.

In another sense, curricular design is presented as a response and / or institutional proposal that defines what, how, and for what to teach and form; it is conceived as a way of conceiving and approaching the production and reproduction of knowledge. In this sense, two elements are essential (De Alba, 2013):

- Curricula should not be structured as a modular system, that is, around the objects of study and the areas of knowledge of certain professional practices.
- Universities define the type of training offered to their students. The purposes of these must go hand in hand with the purposes pursued by the institution itself.

In a summarized way, it can be said that the curricular design or adjustment involves a decision-making process for the preparation or adjustment of the curriculum, "previous to its development, which flexibly configures the space where it will be put into practice,

through a process of teaching and learning of which the curricular project is its anticipated vision "(Stenhouse, 2013, p.31).

On the other hand, if it is understood that learning by conceptual and integrated understanding has to do with the ability that a subject develops to establish relationships between scientific ideas and daily practice, it is necessary to design learning environments that provide this possibility. In fact, environments must have certain elements of teaching aligned: learning goals, ideas, scientific practices, cross-cutting concepts, teaching and evaluation strategies. (Candela, 2016)

Unfortunately, the lack of intra- and inter-curricular coherence in many of the teaching materials does not commit students to the relevant phenomena, nor does it support them in the progressive development of skills for understanding and reasoning. (Roseman, Linn and Koppal, 2008)

This situation is evident in the difficulty they have to learn by conceptual understanding and integrated concepts of science, since a rigid and traditional curriculum does not confront the student with situations of the everyday world where scientific knowledge must be used to give answer to real problems. As a consequence, teachers and students do not find sufficiently strong support for the achievement of learning goals. (Schmidt, Wang and McKnight, 2005)

However, when talking about a flexible curriculum, it must be planned, coherent (internally and externally), selective, provisional, systematic, democratic, functional, contextualized, ecological, common and diversified, integrated, intercultural, and influential in the different areas of the IES.

Therefore, pointing to the methodology and competences as learning content highlights the imitation component on the part of the students of what the teachers who teach them do, therefore, the most important thing is to provide the student with their own strategies to achieve greater knowledge. (Canton, 2007)

Regarding the new curricular proposals, these should be built on the basis of the development of professional skills expressed in attitudes, knowledge, methodologies and

strategies that allow the teacher to give quality attention to educational diversity in regular education considering the cognitive, social differences and individual students, thus responding to the global demand for education for all in the most integrated environment. (Ortíz, 2007)

Regarding the organization referred to space and time of the courses in the subject of HEI, it is necessary to establish some criteria of the pedagogy that support the way in which the curricula are designed. To have a more precise idea it is prudent to ask some questions that help to think the curricular innovation, among them:

- How is the training of a professional structured?
- Is it possible to cover aspects related to knowledge and the theoretical / methodological dimensions, and apply them to professional practice?
- From what temporality should the academic load be leveled, and what should be the division of the school year ... semesters, quarters or school year?
- On what is based the seriation of subjects / courses?

The best way to have an answer to these questions is through the development of a coherent, integrated curriculum, without gaps in student training or repetitions and redundancies, and in a strategic vision for the future and with a view to integration between the students and society.

This innovation must be transcendent in terms of competence training and student independence, all accompanied by the idea that HEIs must increase enrollment so that it can continue in force, so the flexible curriculum must consider the advance of the scientific-technical field oriented towards the theory, the application, or both. (Kunakov, and Romero, 2012)

A final aspect to note is the establishment of the administrative organization of the curriculum in terms of duration, academic charges, credit value, seriation, among other aspects (De Alba, 2013). The adequate organization of university curriculum content

requires taking into account the logics of the profession, science and pedagogy, student participation and, of course, avoiding adapting it to pre-established schemes.

Innovation is only possible if you look for the elements that can drive change, and says that the best example of a flexible curriculum is the tendency to globalize the establishment of a system of academic credits, an aspect that HEIs have been able to establish throughout the year the years (Ruíz, Barreto y Blanco, 2008). This serves as a basis to understand that the way that universities have followed is the ideal one in terms of flexibility to put aside the rigidity in which they usually find themselves, an aspect that, imminently, favors the development not only of students, but of the new professions where the flexibility of the programs usually refers to both the content and the methods.

These characteristics lead to a greater interest in the evaluation due to the need to guarantee that less rigidity has higher quality, however, this is also a matter of debate among the specialists, since sometimes they point out the opposite: the ambivalence of the processes of Learning and teaching can lead to the degradation of the educational system. (Roseman, Linn and Koppal, 2008)

A curriculum is far from flexible if its content is limited to a homogeneous and predetermined scheme of study plan, in any of its temporalities-biannual, bimonthly, quarterly, etc., and with the same number of subjects, but with the same backbone of the study plan, everything, of course, without taking into account the characteristics of the content to be organized. (Ruíz, 2008)

Results

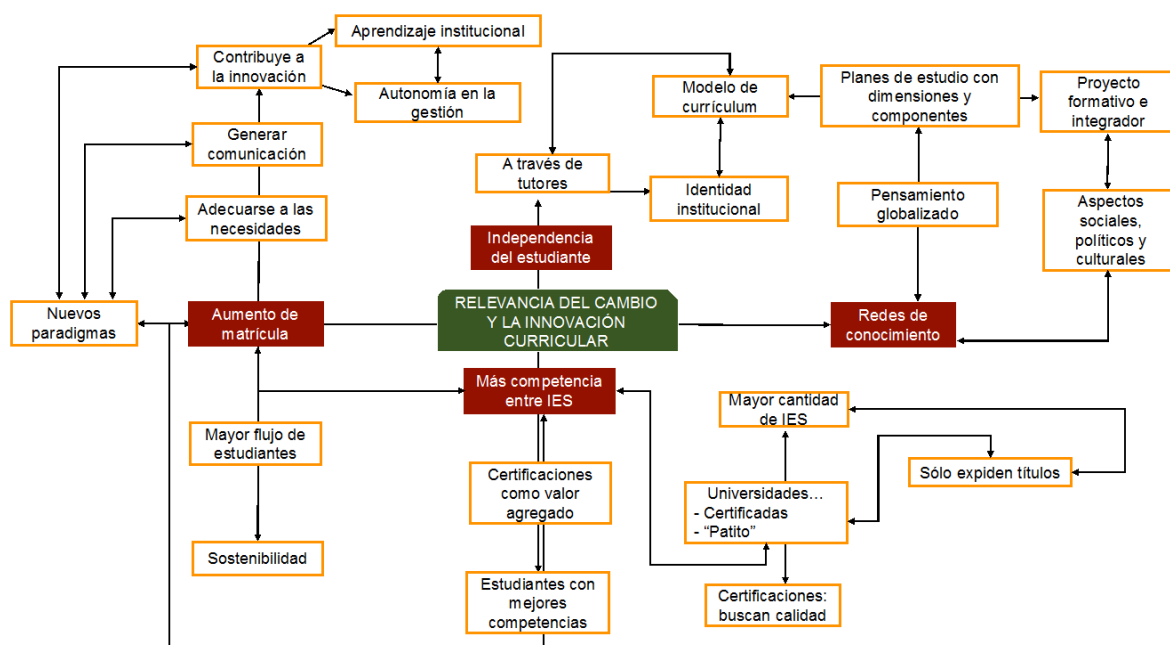


Figure 1. Model: Importance of the change in the curricular design

Source: self- elaboration

This model presents four aspects that support the idea of relevance: the knowledge networks that emerge from this kind of plans, the independence and self-learning of students, the increase of enrollment in HEIs, and the increase of competition among universities.

At the top, the independence of students is perceived as one of the essential elements for establishing flexible study plans. Self-learning can be guided through tutors and can be part of the model of a curriculum, hand to hand with an institutional identity.

Y having a robust model it is possible to find curricula with dimensions, components and dilemmas that should be solved from different areas with the aim of achieving better academic results, all in order to achieve an integrative and formative project. These plans must consider a globalized thinking in order to have a competitive educational system.

A second idea is found in the right section of the previous graph, which focuses on knowledge networks immersed in social, political and cultural situations, and all this can be reinforced from the flexible curriculum.

In the lower section of this model, it can be seen that part of the importance of establishing flexible curricula is that competition for university enrollment could be established in accordance with more identifiable elements, that is, there would be other types of certifications that would provide greater added value, and this can make possible that there are students with better skills.

Having universities that compete to have a greater volume of students is that certified IES and "duckling" are presented, or that they lack elements that could mean certain added value, and here you get to an elementary point, which certifications, for Generally, they look for quality.

However, we must not forget that many HEIs are only seeking to issue degrees, that is, achieve a high turnover of students with the aim of increasing the profits of the educational institution, therefore, far from having a purely economic thinking, the universities that really bet on transcending in society must consider some elements such as the certifications to achieve it.

When continuing with the topic of the relevance of the change in the curricula, on the left side is one of the basic elements of the universities, which consists in the increase of enrollment. At this point it is important to mention that if HEIs decide to pose flexibility as a reality, they must seek the best quality of students, having a large amount does not represent any added value for the University.

This increase in enrollment therefore leads to a greater flow of students, and is that, if students are able to define their line of study, and adapt their learning to the needs they may have, their stay at the University will be smaller but better use, since the idea of a flexible plan is that the student has its own pace of studies because it is he who designs the way in which he has to complete his higher education.

Having not only a higher enrollment, but a constant rotation, the universities become more sustainable, that is, the financial situation does not become an inconvenience for its operation. But all the above part of issues that must be considered very seriously: breaking

educational paradigms, getting both the student and the faculty and administrative staff understand that the academic future lies in flexibility.

When we talk about new paradigms we refer to adapt to the academic needs of the student, and to new methods of learning, to consider that the development and promotion of communication is one of the primary elements to achieve the success of flexibility and, of course, by breaking patterns of rigidity in the curricula, educational innovation is contributed.

This innovation is based on two elements: institutional learning and management autonomy. The first one refers to the fact that the members of the university communities must be able to be in constant learning to achieve the objectives set, above all, at the academic level; while the second focuses on the need for IES to be managed autonomously.

As can be seen, the need to create flexible curricula is necessary to satisfy a society that is constantly changing, it is to consider that education has had and will have changes in the way it is designed, and this model reflects it in a clear.

Conclusions

Through the research carried out, it can be understood that the change in the curricula is imminent, but, above all, that the curricular innovation must be understood as the immediate future so that the student is able to understand their future as something that they have to plan and execute.

The model shows that flexibility can be conceived as the educational future and that to have a curricular change it is necessary to appeal to the commitment, updating and participation of teachers, above all, to be able to intervene in the various processes of implementation and implementation of changes to perform.

With the model developed it was established that innovation in education is a process that must be covered from multiple areas, and can not be assumed that the word innovate has a single theoretical basis and can be circumscribed without price analysis and / or priori, for that reason this term must be contextualized, and more if it is about educational questions.

Finally, it was found that to achieve adequate innovation it is necessary to consider the ideal number of teachers, according to the volume of students, who can collaborate according to the degree of curricular flexibility, have the appropriate infrastructure to work with active learning methodologies that raises the innovation, and, finally, to consider an accompaniment to the professors, and constant work of equipment; It should be remembered that without proper collaboration, no project can prosper.

Bibliographic references

- Brailovsky, C. A. (2011). *Educación Médica, evaluación de competencias*. Buenos Aires: University Press.
- Candela, F. (2016). *La Ciencia del Diseño Educativo*. Cali, Colombia: Universidad del Valle.
- Cantón, I. (2007). Diseño curricular e innovación educativa. *Revista española de pedagogía*, LXV (237), 361-380.
- Confrey, J. (2016). *The Evolution of Design Studies as Methodology*. The Cambridge Handbook of the Learning Sciences: Cambridge.
- De Alba, A. (2013). *El currículum universitario. De cara al nuevo milenio*. México: Plaza y Valdés.
- Gvirtz, S, y Palamidessi, M. (2015). *El ABC de la tarea docente: currículo y enseñanza*. Aique: Buenos Aires.
- Kunakov, N., y Romero, L. (2012). Las características esperadas del docente en una innovación curricular orientada a competencias. *Docencia Universitaria*, 10, 257-268.
- Lozano, L. A., y Lara, C. J. (2011). *Paradigmas y tendencias de los proyectos educativos institucionales: Una visión evaluativa*. Bogotá: Magisterio.
- Malagón Plata, L. (2009). La pertinencia curricular: Un estudio en tres programas universitarios. *Educ*, (12), 11-27.

- Michel, L. (2013). Miradas: historia de experiencias en innovación curricular en la Facultad de Medicina de la Universidad Mayor de San Simón. *Educación Médica*, 36(2), 112-117.
- Ortíz, H. (2007). Formación del profesorado y atención a la diversidad: desafíos a los procesos de innovación curricular en educación inicial. *Académica*, 33, 45-60.
- Rodríguez, M. (2015). *Educación para la carrera y diseño curricular*. Barcelona: Universidad de Barcelona.
- Roseman, J. E., Linn, M. C., y Koppal, M. (2008). *Characterizing curriculum coherence*. New York: Teachers College Press.
- Ruíz, J. M. (2008). Nueva forma para una organización más flexible y con calidad. *Pedagogía universitaria*, 13(3), 27-33.
- Ruíz, J. M., Barreto, G., y Blanco, R. (2008). Necesidad y utilidad de la categoría “competencia”. *Ciencias Pedagógicas Revista Iberoamericana de Educación*, 45(1), 1-8.
- Schmidt, W. H., Wang, H. C., y McKnight, C. C. (2005). Curriculum coherence: An examination of US mathematics and science content standards from an international perspective. *Journal of Curriculum Studies*, 37(5), 525–559.
- Silva, P. (2016). *La universidad cubana: el modelo de formación*. La Habana: Félix Varela.
- Stenhouse, L. (2013). *La investigación como base de la enseñanza*. Barcelona: Morata.
- The Design-Based Research Collective (2003). Design-based research: An emerging paradigm for educational enquiry. *Educational Researcher*, 32(1), 5-8.
- Tobón, S. (2013). *Formación basada en competencias. Pensamiento complejo, diseño curricular y didáctica*. Bogotá: Ecoe Ediciones.
- Tovar, M. C., y Sarmiento, P. (2011). El diseño curricular, una responsabilidad compartida. *Colombia Médica*, 42(4), 508-517.

- Vidal, M. C. (2007). Diseño curricular por competencias. *Revista Cubana Educación Médica Superior*, 3 (17), 1-10.
- Vidal, M. C., y Pernas, M. (2007). Diseño Curricular. *Revista Cubana Educación Médica Superior*, 2 (21), 1-12.
- Zabalza, M. (2012). Articulación y rediseño curricular: el eterno desafío institucional. *Revista Docencia Universitaria*, 3 (10), 17-48.