

**Gateways:
International
Journal of
Community Research
and Engagement**

Vol 10 (2017)

University Vinculación

**A two-way strategy for sustainable development
and academic relevance**

Rebeca Hernández Arámburo

Héctor Cruz González

Alicia Ceja Rivas

University of Veracruz

© 2017 by R Hernández Arámburo,
H Cruz González & A Ceja Rivas.

This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 Unported (CC BY 4.0) License (<https://creativecommons.org/licenses/by/4.0/>), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercial, provided the original work is properly cited and states its license.

Citation: Hernández Arámburo, R, Cruz González, H & Ceja Rivas, A 2017, 'University vinculación: A two-way strategy for sustainable development and academic relevance', *Gateways: International Journal of Community Research and Engagement*, vol. 10, pp. 14–32. doi: 10.5130/ijcre.v10i0.5480

Corresponding author:

Rebeca Hernández Arámburo
rhernandez@uv.mx

DOI: <http://dx.doi.org/10.5130/ijcre.v10i0.5480>

ISSN 1836-3393

Published by UTS ePRESS

<http://epress.lib.uts.edu.au/journals/index.php/ijcre/index>

The utopian ideal shared worldwide is to achieve sustainable development to ensure the best conditions of life for every living being inhabiting the planet, now and into the future. It's said to be utopian because, at this time of obvious environmental, social and economic decay, it seems that what we long for will never be achieved. However, the struggle continues and the dream remains. Great leaders throughout the world, government and non-governmental organisations, and society in general have assumed the responsibility for guiding action toward this end.

In Mexico, the government has adopted the definition of sustainable development as 'the efficient and rational management of resources, in a way that makes it possible to improve the welfare of the population without compromising the quality of life of future generations' (ProMéxico). Leff (2002) complements this perspective in a complex way:

the principle of sustainability is manifested as a mark of the fracture of the modernising reason and as a condition for building a new productive rationality founded on ecological potential and on new civilising senses based on the cultural diversity of the human race. It is about the reappropriation of nature and the reinvention of the world; not only of a world in which many worlds can coexist, but of a world shaped by a diversity of worlds, opening the encirclement of the globalised economic-ecological order.

The authors of this article understand that sustainable development brings us closer to a comprehensive social order in which humanity has the challenge of viewing reality in all its complexity, but acting simply in order to solve the socio-environmental problems it suffers.

The most important challenge lies in thinking and acting in reality from an integrated scientific perspective, so that the generation and transmission of knowledge is increasingly effective in providing solutions within complex contexts. It is within institutions of higher education that education and scientific research can play a critical role in social transformation. The

university provides classrooms and research centres, human talents and vision, technology and scientific innovations; it can become the stage and its participants the actors in promoting sustainable development.

In this sense, institutions of higher education have to focus their efforts on attending to one or several areas of need through programs of care, research and outreach services, and the dissemination of information resulting from these efforts. However, in many cases, this attention is oriented to a specific problem and sometimes the involvement of different actors is poorly articulated. This has resulted in small impacts scattered across different areas and sectors of the population.

On the other hand, many institutions of higher education seem to be focused on training human capital that can strengthen the economic structure of a country. If the results are adequate, partnerships are established between the university and industry, which makes it possible to extend the scope of action. A cycle occurs in which the market looks to the university because it gets benefits such as technological advances and labour; in turn, the university benefits from access to resources used to further develop scientific research and sources of employment for its graduates. If the results are not adequate, the additional financial resources that the university may obtain are reduced and work with different sectors becomes restricted.

Hence, the interest of the market in higher education is forcing the commercialisation of universities, with the risk of turning higher education into a space in which '[universities] would provide products demanded because of their transient utility in the market, not because of their relevance to the project of the construction of society' (De la Cruz Ayuso & Sasía Santos 2008, p. 43).

If things continue in this direction, the university itself will manifest as a 'mark of the fracture' between the most pressing needs of society and higher education's substantive functions. Knowledge must travel a long way from its generation before it gets to those who most need it. In consequence, the following questions arise: Where does the university fit in? What is its role within complex social structures? How can it produce a *vinculación*, or two-way interaction, between the university and the wider environment that contributes towards sustainable development?

This article attempts to answer the above questions by discussing the project of the Universidad Veracruzana, which, put simply, is the intention to achieve a balance between competing needs by establishing a strategic university-society *vinculación* that focuses its actions on a double-track interaction. The university starts from a scientific and technological basis and establishes two strategic lines of action – one directed towards social development and the other to economic development – both of which are intended to favor sustainable development. As well, the *vinculación* incorporates feedback mechanisms, which act to influence university practices and validate the advances in science

and technology. This article discusses the university's development of its University Social Action Model, a strategy to clarify and systematise its long experience of engagement across all aspects of the university.

BACKGROUND: HIGHER EDUCATION IN MEXICO

In Mexico, such questions around the purpose and role of universities have always been a part of higher education. Indeed, the public university was born in response to very specific social demands, and which it proposed to solve through science and technology. The National Autonomous University of Mexico (UNAM, in Spanish) is one of the oldest universities in Latin America. It originated during the time of Spanish colonial rule, as a result of the hegemonic need of the Catholic Church to expand and dominate knowledge, just as had happened in Europe.

In the struggle for autonomy and the Mexican revolutionary movement of 1910, the university laid the foundations for ideological diversity, with a strong tendency to address problems related to injustice and abuses of power. As such, one of the most socially significant acts of UNAM was to open its doors to anyone who requested it, regardless of their social status. A similar history belongs to the University of Guadalajara, which was also influenced by the social changes of the Mexican Revolution. It established an ideology of support for minorities, and engaged in the social policy of the state of Jalisco to improve the living conditions of the population through science, art and culture. The most recent establishment of universities in Mexico's south-eastern region, which includes the Universidad Veracruzana, has its roots in the need to bring higher education to all social groups, including indigenous, to promote social change on the one hand and the preservation of culture on the other.

Public universities in Mexico have traditionally relied on government funding. Since higher education is a public service that is supported by the federation, states and municipalities, funding is provided by all levels of government: the federal government provides 78 per cent, the state governments provide the remaining 22 per cent, and the municipal governments provide occasional donations of land or support for construction. However, in recent decades, the increase in the number of higher education institutions and student enrollments in public universities has resulted in a reduction in university funding. Along with a growing demand for university projects to solve environmental problems, this has generated the need to seek new financing. Therefore, the current position in higher education is to integrate models of science and technology development that promote economic growth with models that address societal needs.

Half the funding for science and technology comes from public resources; thus, public universities recognise that they have a commitment to society, which is materialised in the generation of

knowledge and the training of high-quality human resources which will contribute both to raising the competitiveness of the country ... and to the solutions of social needs (Dutrénit, 2012).

Since its birth in 1944, the Universidad Veracruzana has been recognised nationally and internationally for its social and humanitarian *vinculación*. Initially, the university's *vinculación* focused on collaboration with the government: for the university, it was a means to apply knowledge acquired in the classroom, and to obtain resources for the expansion of its facilities and equipment; for the government, value came from gaining university support in solving certain problems.

During the 1970s and 1980s, as marginalisation and poverty worsened in rural and indigenous communities, the Universidad Veracruzana transformed its vision and a phase of collaboration with communities began. This resulted in actions that ranged from plans of assistance to projects of self-management and self-sufficiency, which both shapes the behaviour of the communities involved and promotes the identity of the university. Social development is the end goal, and teaching, research and university outreach is the means with which to achieve it.

However, without a guiding axis, these practices were not well coordinated. In the 1990s a structured proposal for multidisciplinary attention to society emerged, with projects such as the University Social Service Brigades (BUSS, in Spanish) and Casas de la Universidad ('university houses'). (These activities, for which the university was awarded the MacJannet Prize for Global Citizenship in 2012, are discussed briefly later on in this article.) Now, with more than 50 years of constant activity and interaction with society, as well as sustained reflection, the university is able to formulate the proposal presented in this article. The proposal gives form and structure to the actions that derive from the university's educational and professional practices and social services, and involves a total enrollment of almost 80,000 students from 175 undergraduate and 137 graduate programs. This commitment is expressed in the university's General Development Plan 2025:

The Universidad Veracruzana is always committed to the social, economic and cultural development of Mexico, and the State of Veracruz recognises the diversity of the socio-natural environment and the commitment of its academic work to provide viable answers to the needs and problems of the community (Universidad Veracruzana 2008).

This mission reiterates the university's commitment to society and expands the parameters by which the university's social responsibility can be viewed. The university's long-standing emphasis on support to rural communities and urban groups does not exclude a commitment to indigenous communities, who form one of the most truly representative social groups of the state and of the country, nor does it exclude the public sector and public and private companies committed to social development. Despite

the importance of the dedicated involvement of the university, it is not – and should not be – the only entity responsible for social development.

Public universities in Mexico have a clear understanding of the above: the leadership that they strive for goes beyond the generation of knowledge; they are leaders because of their ethical behavior, their commitment to social justice, their tenacity in ensuring that science and technology are directed to the common good. Therefore, when a university like Veracruzana raises its voice, its always carries in its tone a commitment with the society.

UNDERSTANDING *VINCULACIÓN*: A STRATEGIC PROCESS OF INTERACTION FOR SOCIAL AND ACADEMIC RELEVANCE

Vinculación is a polysemic concept that, without context, can have as many meanings as users of the term:

Today there is no single definition of the function of vinculación in higher education institutions; when attempts have been made to define the term, it has been done in very general ways, and even on some occasions it has been viewed as an indefinable category (Campos & Sánchez 2006).

In this article, *vinculación* is understood as a *strategic process* for attending to society's needs and problems via its deliberate inclusion in the development of the university's substantive functions of teaching, research, outreach and cultural diffusion. Furthermore, these processes include feedback mechanisms that impact on the university's work. These mechanisms refer to the various strategies used by academics and students to share the positive and negative results of their practice with the governing academics at the University. These strategies include faculty meetings, publications, congresses, forums, among others. In this article, we opted to keep the term in its original language; we consider that its English equivalent ('engagement') emphasises a university's action on the environment, without always considering the importance of information feedback. We recognise that our understanding may differ from that of others, depending on what each country or university identifies as a priority. Therefore, it is essential that, within the formal context of higher education, the concept of *vinculación* should be limited. Campos and Sánchez (2006), in their study on the interpretations of university *vinculación* in Mexico, proposed at least three uses of the term:

- Physical:** the relationship that is established with society in the form of care, operated principally through the compulsory Mexican Social Service, with practices coordinated by academics and sometimes professional practice;
- Economic:** the relationship that the university sets with society, especially with the private sector, in terms of the search for financial support for projects of a public or private nature. It promotes the achievement of alternate funds, with a strong tendency to consider productive development as the ultimate goal;

—**Substantive:** university *vinculación* is considered a substantive function responsible for the planning and operation of specific actions that are carried out with the wider society; this does not necessarily imply coordinated actions with academia and research. Under this perspective, it is an end in itself.

However, for the Universidad Veracruzana, given its long trajectory of involvement in social fields, the existing interpretations are not enough. By deliberately including *vinculación* in the university's existing substantive functions, the two-way process is able to strategically benefit academically from all of the university's various engaged activities, regardless of type, as well as retain the freedom to vary its activities and perspective as need be. If *vinculación* is considered a third mission or new substantive function in its own right, this integrated adaptability may not be possible.

In short, Universidad Veracruzana's institutional strategy of *vinculación*, with the productive, social and government sectors, is built under a social-academic perspective that allows for the establishment of relationships of mutual cooperation in order to create an impact external to the university, and ensure a return mechanism (feedback) for the improvement of educational programs and processes of research, which aid in the university's search for social and academic relevance.

Understood in this way, university *vinculación* is achieved to the extent that certain basic conditions are met:

- 1 There is a social problem that can be addressed from one or several areas of knowledge.
- 2 There is a proposal that arises from an academic group, under the framework of an area of knowledge, or a set of areas.
- 3 There is a possibility of two-way interaction mediated by certain agreements that have been entered into by both parties and been formalised.
- 4 Subsequent to the attention of the problem, there is feedback from the interaction that allows for the evaluation of the academic and social impact of the process.

To fulfil this notion of a social-academic perspective, the Universidad Veracruzana organises its processes of interaction with society along two strategic lines that guide the direction of its actions and focus efforts on ensuring maximum impact.

GUIDING VINCULACIÓN: ECONOMIC AND SOCIAL STRATEGIC LINES OF ACTION

The university's model of *vinculación* sets up two strategic lines of action: one focused on economic development and the other focused on social development. The two lines of action work together to give meaning to sustainable development. It is necessary to clarify that these are neither diverging nor parallel lines – they feedback mutually, affecting one another positively or negatively. A proposal for action usually emphasises one line or another, but can incorporate both social and economic

development outcomes; an example may be a project based on the economic needs and potential of a community.

The line focused on economic development proposes alliances with industrial and business sectors to support the economy through actions that promote a culture of entrepreneurship, allowing university students and the general community to be leaders in innovative, productive projects, and also improve rates of employment. It also proposes joint work in research and technological development for the optimisation of production systems and innovation in products and processes that will improve quality of life within society.

The line of action focused on social development aims to create partnerships with communities, social groups and the government sector, and to establish action plans that have an impact on areas of intervention such as health, education, environment, culture, recreation, sports and urban infrastructure, promoting an attitude of self-management and sustainability.

1. Strategic Line Focused on Economic Development

Scientific and technological transformations in recent decades have impacted all dimensions of human living: work and recreational spaces, the domains of health, food, and, of course, communication systems. The productive structures and use of energy systems have also been transformed and given rise to an economy based on the ability to generate and use knowledge for industrial development and trade.

The accelerated pace in scientific and technological advancement reduces the distance between the production of knowledge and its application, bringing research centres and companies closer together. The Organization for Economic Cooperation and Development (2009) established that innovation is a key part of economic development; so much so that governments have directed a substantial proportion of their investments into innovation.

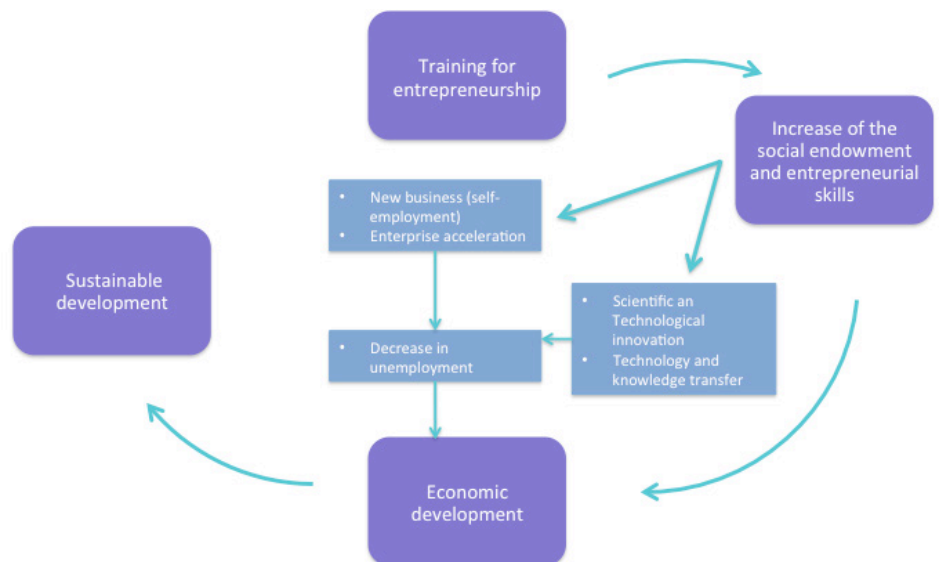
Such changes have impacted on the objectives of higher education institutions, which previously focused on the generation and transmission of knowledge but now consider the transfer of innovation and technology as priorities in the promotion of regional and national economic development.

Innovation has two main components: technological development (inventions) and its subsequent translation to the marketplace (commercialisation), by which it can contribute towards economic development. It is therefore necessary that universities recognise in the two components the different pathways (see Figure 1) through which they can exploit their scientific and technological capabilities to address students' professional development demands with labour market requirements, and to contribute to surrounding community needs. Entrepreneurship should be the trigger for a process that strengthens a proactive attitude in students – and, in fact, across the entire university – which, when combined with skills for the

management of ideas and the development of projects, opens doors to the workforce, either through institutions, private companies or self-employment.

Figure 1 shows a line that goes from training for entrepreneurship to social endowment. The important idea is that, as far as the university provides tools and programs to develop entrepreneurship among its fellows, the wider community benefits by having a better prepared workforce gifted with entrepreneurial skills, resulting in new business and growth in existing companies (enterprise acceleration), and a decrease in unemployment. Equally, the same result could be possible through strategies of innovation based on the transfer of research and technology at the national and international level. The results of these technological innovations provide feedback to the university, impacting on scientific breakthroughs, and, ultimately, on economic and sustainable development.

Figure 1. Strategic line focused on economic development.



In the case of the Universidad Veracruzana, this approach is a collective effort by two programs: Emprende UV, a program that is aimed at the development of entrepreneurship within the entire Universidad Veracruzana community through a series of extracurricular workshops in entrepreneurship; and Inserción Laboral, a program that places those students who have undertaken the entrepreneurship workshops but do not want to start a new business into jobs in companies seeking innovators or entrepreneurs. On the other hand, many of the workshop participants are academics, who return to their laboratory and redirect their research with a market orientation and multidisciplinary approach to the development of technology with potential for commercialisation, providing new elements for the competitiveness of industry or new opportunities to create value for start-ups.

2. Strategic Line Focused on Social Development

The public university of the 21st century must play a key role in the transformation of society, not merely as a momentary response to trends in economic development but in recognition of the opportunity to build a society with lower inequality, less poverty,

less violence, less indifference and with greater understanding of sustainability and human rights. It is increasingly pressing that universities move from being an entity that analyses and contemplates social problems toward one that engages and generates alternative solutions to transform the conditions that hinder local, state or national development. The great majority of the factors impeding social development are positively influenced by developments in education, science and technology, which have their origin in the work of higher education institutions.

Therefore, the challenge of the university is to contribute to social transformation, defined by López Montaña (2005) as ‘... the process that seeks to eliminate the barriers that hinder access of the weak and of the middle classes to productive assets, opportunities for progress and the benefits of public policies’. It is a process, which, in the course of time, should lead to an improvement in the living conditions of the entire population in multiple areas (health, education, nutrition, housing, social security, employment, infrastructure and income), with the notion of sustainability permeating throughout and across these areas. It also implies the reduction of poverty and social inequality and the eradication of corruption. In this process, the role of the state as promoter and coordinator is critical, as is the committed participation of social actors, both public and private, with the university as an additional actor, providing talent, technical expertise, scientific method and knowledge.

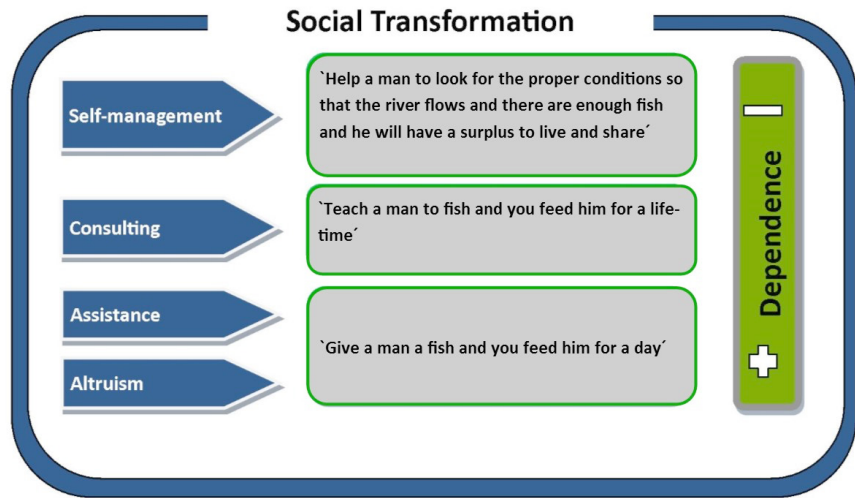
The purpose of the university is to train students committed to their social environment, which is in itself an exercise of social transformation. However, the commitment goes beyond that. It calls for the participation of the entire university structure, by means of the articulation and linking of its substantive functions (teaching, research, outreach and dissemination of knowledge and culture) with the resolution of specific problems in society and its constituencies.

In its long experience of social *vinculación*, Universidad Veracruzana has built a very particular vision of the way in which a process can be organised in order to respond to the challenge of social transformation. The subsequent systematisation of this experience has led to the development of a model that integrates more than 20 years’ experience of designing actions and projects that have been linked to the substantive functions of the university. The result is the University Social Action Model (MASU, in Spanish), which is defined as the expressive provisions or instruments that are provided by the university, perceived or received by the society, and generated in the process of engagement between university and society, with the ultimate purpose of promoting social transformation for sustainable development.

MASU is a strategy to clarify the social commitment of the university based on four levels of support: altruism, assistance, advice and the promotion of self-management for

social transformation (see Figure 2). It is suggested that the role of the university should go from being an autocratic leader to a companion for the creation of possibilities for social development.

Figure 2. University Social Action Model (MASU).



The objective of MASU is to provide resources that are specific to the university to impact on the development of communities and groups of society; at the same time, it is an exercise in feedback on the academic and social relevance of the university’s substantive functions. The emphasis is on reducing the dependence by society on external actors such as universities, so that groups and individuals can determine for themselves decisions and actions in their search for better living conditions (see Figure 3).

Figure 3. Definitions of impacts, action percentages and reduction of dependence (as action by society increases, dependence decreases).

Levels of university actions	University		Society		Modalities of university vinculación	Modalities of social participation
	Academic impact	% of action	Social impact	% of action		
Altruism	<ul style="list-style-type: none"> Promotion of values among university students students Social commitment 	90	<ul style="list-style-type: none"> Instrumental and in kind benefit 	10	<ol style="list-style-type: none"> Volunteering Social service School practices Academic stay Community residence Dissertation Research projects Outreach 	<ul style="list-style-type: none"> Community Groups Individual
Assistance	<ul style="list-style-type: none"> Professional practices Case studies Multidisciplinary work 	70	<ul style="list-style-type: none"> Benefits in areas such as health and infrastructure 	30		
Consulting	<ul style="list-style-type: none"> Project design Workshops, courses and talks topics of public interest 	50	<ul style="list-style-type: none"> Generation of healthy habits Training in general areas 	50		
Self-management	<ul style="list-style-type: none"> Specific Project design Workshops, courses, talks on specific topics 	30	<ul style="list-style-type: none"> Training in specialized topics 	70		

An example of how this model has been implemented is the project known as Casas de la Universidad, or university houses: physical infrastructure, located in communities, which provides links between the university and the community. Here, the university collaborates with community members on academic and research projects to contribute to the sustainable development of communities that are marginalised in Veracruz state. There are now seven such university houses. At each, multidisciplinary groups of students, academics and researchers attend to the most pressing problems, offering, among other things, health services, consulting for productive projects according to the characteristics of the community, urban design, and programs for the rescue of traditions and culture. For example, at Coyopolan university house, programs and activities include community health

promotion, diagnosis of community health, nursing, nutritional guidance; environmental activities such as reforestation, recycling, livestock advice and training, and the establishment of a native seed nursery; accounting and administration training; online and distance education programs; and cultural, sport and recreational programs.

The university houses are managed by a coordinator, who is a key player in establishing the university's contact with the community. As a first step, the coordinator establishes a Community Committee comprising local authorities and community leaders, who commit to analysing the needs of the population and define the direction of solutions. The committee also guides academics about the needs of the population and possible options for engagement. As proposals are developed, they may range between four levels of university actions (as described in Figure 3), depending on the problem and the level of community participation. Proposals for action may be oriented to social or economic development, or both. It is important to mention that even when projects proposed by the university are perceived as disconnected from one another (an action related to oral health and another to urban development, for example), since everything is coordinated from the university house, problems and actions are integrated and analysed as a complex whole. The results are exposed to the community for analysis and decision-making, and to the academia to identify the social relevance of the academic activity. (For more information on the university houses, and evaluation of specific projects, see the reference list for sources, in Spanish)



Above: Casas UV:
Coyopolan, left, and
Atlahuilco, right.

THE PROCESS OF VINCULACIÓN: DESIGNING A MODEL FOR COMPLEXITY AND FLEXIBILITY

Universidad Veracruzana's *vinculación* is characterised by having multiple pathways for interaction leading to multiple outcomes, therefore, its design is complex; implementation involves a greater degree of difficulty than other linear solutions that are more limited in their processes and results. However, the need for great complexity comes from the fact of a changing environment.

Consequently, there is no set manual of procedures, but a number of key elements that need to be considered.

1. Purpose and Scope

The start of this process is the triggering question: What is the purpose of the *vinculación*? If we consider the different perspectives of *vinculación* mentioned at the beginning of this document, one can define the type of engagement – social or economic – making it possible to trace the path of the entire proposal. A *vinculación* whose intention is to find spaces for student practice (and offer feedback on students' professional skills) follows a very different path to a *vinculación* that proposes as first purpose the obtaining of resources to support institutional projects. A *vinculación* that is focused on applying a concrete knowledge also differs from the one that focuses the investigation on the solution of a general problem.

The intention must be clear from the beginning, because this will determine the definition of the academic and social outcomes in a focused and two-way process. To do this, the following aspects should be considered:

- 1 The identification of an issue on which impact is desired, whose identification is effected by means of research or by an express request from the government, company or groups of society. The problematic, described in disciplinary terms, will define the form of assessment that will be used to determine, at the end of the intervention, if there was an impact or not.
- 2 The development of a proposal of attention based on a theoretical framework specific to the discipline or disciplines involved. In this way, the theoretical, conceptual and contextual references, which will guide purposeful action, are clearly expressed. This proposal allows for the validation of the theories through their application in reality, and by using the results of the strategy as raw material for academic reflection.
- 3 The establishment of the scope of the attention defined on the basis of an analysis of the possibilities that the university has to deal with. This involves assessing the capacity of human and financial resources, and time needs. The definition of this is expressed in specific, formalised agreements between the parties, defining the commitments of each of the actors.
- 4 Definition of a return path for feedback on both the academic and social impact of the attention.

2. Diagnosis

Once the purpose and scope of the *vinculación* are defined, the next step is to make a diagnosis that will establish a point of departure for forming a detailed understanding of the problem identified. The diagnosis also sets out the variables on which the *vinculación* intends to influence and, in turn, parameters by which to identify if there has been a change or not.

The diagnosis will be understood, in this document, as a study prior to any planning. It emerges as an institutional need

that consists in the collection of information, identification and analysis of the problems and/or real needs, with the purpose of exploring and understanding the existing situation and, above all, to propose potential solutions and opportunities that will allow for the design of strategies and actions leading to improvements.

Given that the social-academic *vinculación* implies a two-way process, and an impact in both directions, the diagnosis that arises must consider two aspects: academic and social.

The academic diagnosis starts by defining the prerequisites that the student must fulfill to carry out the action of the linking proposal, as well as the definition of academic competences that are considered necessary, specifying if this knowledge will be acquired, reinforced or only evaluated in the activity. Cazares and Cuevas de la Garza (2007) considered that competence is linked with the ability to do something, the know-how, the why and what for, in such a way that the competencies may be transferable. They include four knowledges: theoretical knowledge, know-how, to know how-to-be, and knowledge transfer. The purpose is to transcend the immediate context: to transform it, and also to adapt it to new situations.

Given the above, an activity of this nature allows for the development and acquisition of theoretical and methodological knowledge, skills and ethical awareness, all of which need to be considered in the academic diagnosis.

These competencies are linked to subjects taught in the classroom and to the graduate profile, although this does not rule out the possibility of developing additional competencies, specific to the complexity of the problems to be solved. In this way, the diagnosis is the basis for determining the manner in which the action of *vinculación* impacts on the development of the student.

The social or environmental diagnosis provides information with regard to the problems or deficiencies that are present in the context; this is done on the basis of the theoretical proposal previously defined, which gives an explanatory framework of what happened and why. The diagnosis describes the aspects on which the university will be able to influence, and identifies, upon completion of the project, how to recognise if that has occurred or not. A quantitative, qualitative or mixed assessment can be considered. The important thing at this point is that the diagnostic process allows for a comparison of before and after.

3. Planning the Vinculación

When the diagnosis has been completed, there is an overview of the problem: from this, one can make a proposal of social action that is also academically relevant. In spite of the ambiguity that might exist in the concept of 'planning', this is considered a rational activity essential for the achievement of goals. Reyes Ponce (2004, p. 244) proposes that planning is the setting of a specific course of action and its guiding principles, which describe the sequence of operations, establish a timeframe for implementation, and identify the necessary material resources.

When proposing a plan aimed at various actors and social scenarios, it is important to consider that there are factors that can be included and others that cannot be addressed directly, but which can be influenced by the activity that is carried out. Recognising these factors makes it possible to set feasible goals.

Planning in the field of education contributes elements to ensure the effectiveness of the teaching-learning process, and so it considers various components such as the anticipated programming, the knowledge possessed by the student, didactic resources to be used, activities, time and the evaluation.

Considering the above, the planning of the *vinculación* may respond to four central questions: Why act in relation to the problem? What is one trying to achieve? How can this objective be achieved? To what extent were the proposed objectives achieved?

Why act in relation to the problem? This question raises the reasons that give meaning to the specific proposal; it is the expression of the arguments that explain the grounds on which the activity or *vinculación* project will take place, based on the diagnosis and on the theoretical framework of reference. It is presented as a description that sets out the problematic, the academic purpose to be achieved, and the impact on the environment that can be generated. As part of the argument, it is important to explain what future scenarios might occur should no action be taken in response to the problem. In this way, the decisions on what to do and how to do it emerge from an analysis of the whole context.

What is one trying to achieve? This assertion expresses the intention of the specific proposal resulting from the analysis of the context and the problems. It may or may not be a proposal whose scope can resolve the entire problem, but instead considers the greatest impact possible, on the basis of university resources and the possibility of action. The objective gives an indication of what can be evaluated at the end of the action, in both the academic and social arena; this establishes an intention in relation to the social problems identified, as well as to the training of the students and the development of the discipline.

How can this objective be achieved? This gives rise to the description of the process to be followed, the actors involved, the resources required and the timeframe envisioned. A detailed description facilitates the monitoring of the process, and hence a feedback that compares 'what was planned' to 'what is being achieved', facilitating decision-making. This can give rise to a systematisation of experiences that will serve as a basis for feedback of results, a theoretical framework of reference, didactic strategy, and even the participation of different actors.

The final proposal, endorsed by all participants, is formalised through a legal instrument of academic cooperation that sets out the commitments and responsibilities of the university and of the other participating organisations.

To what extent were the proposed objectives achieved? Even when this question is to be answered at the end of the process,

it is defined at the start of the planning. Doing so also involves identifying different moments for 'feedback', so that decision-making, reflection, and change may occur during the process, not just upon completion. It is important to stress that the assessment is not an end in itself but a means to improve the effectiveness of the project; therefore, it provides information on the academic and social outcomes of the strategy and the process itself.

In terms of the academic outcomes, the assessment takes into account the students' competencies of a conceptual, methodological, technical, contextual, ethical and integrative nature; it also considers the didactic strategy utilised in a *vinculación* proposal, and analyses it from the perspective of both student and academic.

In relation to science, including innovations and technology, an evaluation is conducted on the extent to which the framework of reference was sufficient as a response to the identified problem. This evaluation is carried out by the academic group; if the framework is deemed to have been inadequate, the academic group must propose innovations in response to the unsolved problem.

With regard to the evaluation of changes or not in the social context, it is important to consider how environmental complexity can hinder the insulation of variables. The interpretation of the results and outcomes must consider possible additional impacts by the presence of factors not anticipated.

4. Impact Evaluation

The evaluation of the impacts of *vinculación* has as its focus a critical element for academic and social development: relevance. For universities, relevance is a principle on which its social responsibility is based. Gottifredi (as cited in Vergel, 2015) declared:

relevance is directly related to the expectations and feelings of society for the university ... [In this sense, relevance is] defined as the degree of correspondence that exists between social and individual needs being met by higher education, and what is really achieved, as well as other aspects such as socialisation, legitimacy, cultural training, extension and services.

Hence the importance of identifying the two types of relevance upon which the processes of university *vinculación* must have an impact: social relevance and academic relevance.

According to García (2000), social relevance will be understood as:

the degree of contribution or intervention by universities towards solving the needs or demands of society, across technical and social dimensions, current and future: [that is,] its contributions and the way in which the university is felt and perceived by society in its interaction that takes this wider context as an object of study to identify problems, propose solutions and participate in them, [doing so] from a reflective position that allows for the maintenance of the principles inherent to its status as a university.

However, the assessment of social impacts through social relevance is made even more complex when it is considered that the social and economic development of a city or a region does not depend exclusively on institutions of higher education. It is an entangled mesh of responsibilities and capacities, composed of different sectors and institutions that put their resources towards improving the living conditions of the various groups in a society.

It follows from the above the need to refer to those indicators of impact designed by international organisations (for example, the United Nations and the Economic Commission for Latin America and the Caribbean) and consider also the more precise indicators built by the national and local instances that identify problems, needs and specific contexts.

Statistical indicators constitute one of the indispensable tools to resort to in order to have relevant and timely information for decision-making, follow-up of the commitments and accountability. Also, it is essential to assess, monitor and predict trends of the situation of a country, a state or a region, assess the institutional performance and carry out the comparability of economic development and social progress (Sandoval de Escurdia & Richard 2003).

Some of the specific indicators that help the Universidad Veracruzana build a frame of reference for social relevance are organised by areas of impact. In the case of health, the most common indicators are: nutrition, hygiene, contagious diseases, chronic degenerative diseases and health information. In the area of education: literacy levels, schooling, educational continuity and non-formal education. In culture, tradition and sport: strengthening of social identity, roots, interaction and competitive effectiveness. In the environment and nature: quality of water, air and land, and environmental information. In the economy: per capita income, productive projects, sources of employment and labour insertion.

Assessment of academic relevance follows a process similar to that of social relevance, and includes core elements of university planning. The academic relevance corroborates the extent to which classroom learning responds to a curriculum and programs of study that provide the student with a comprehensive and up-to-date education based on research lines, defined by the academic group, and as demanded by the social context. Thus, the indicators of academic relevance can be organised in the following way:

- Training of student: competencies, scope of the training objectives.
- Syllabus: curriculum, teaching strategies, graduate profile.
- Lines of research: relevance.
- General learning: instrumental, interpersonal, systemic.
- Specific learning: conceptual, methodological, ethical, technical, contextual, integrative.

These indicators of social and academic relevance are the most important reason to have a comparative 'X-ray' of the scope and limitations of the processes of university *vinculación*.

By this understanding, even highly theoretical knowledge, when integrated into a body of knowledge, has great social utility in terms of the contribution it can make towards understanding the world. The intention is not that every subject must be directly applied in *vinculación* experiences, but that activities are designed which integrate and draw on the full spectrum of knowledge. In this regard, both the academic relevance and the social relevance must, in principle, be complementary.

Academic relevance is related to the curriculum of academic rationalism, the curriculum with emphasis on social restoration, the curriculum of self-affirmation, an integrated curriculum, and a comprehensive curriculum. Both social and academic relevance must interact and be complementary through the educational purposes, taking into account the needs of individual and collective development. And, given that education is a possibility of transformation for those who are part of this process and also for the context, it is necessary to enable the development of other forms of production, communication and integration that are different from those driven by the neoliberal model that has prevailed despite the psychosocial transformations of the environment (Pupiales Rueda 2012).

Ultimately, a measurement of the university's impact on social and academic relevance will provide an indication of the importance of social responsibility and university participation for social transformation toward sustainable development.

CONCLUSION

The conceptualisation of *vinculación*, as a feedback process, is an essential strategic process for both identifying the academic and social relevance of knowledge generated in university classrooms and research institutes, and for returning the information generated in the process of *vinculación* to the educational process. It is an approach that reaffirms the formative essence of the public university.

The *vinculación* strategy at the Universidad Veracruzana, based on a social-academic perspective, favours the integration of the most relevant factors of development: the economic and social. This integration exists in a dynamic balance in which neither is of greater importance than the other. This promotes the possibility of addressing a problem from a diversity of perspectives across disciplines, in which each discipline analyses a part of the phenomenon, contributing their results to the whole, and thereby producing a more complete answer to a problem.

The academic aspect, in the same way, seeks an integrated construction of knowledge generated through its interaction with the environment. This interaction strengthens the complex vision of scientific research, the joint disciplines, and the generation of relevant research lines within the context in which they operate. Equally, by implementing theoretical, heuristic and axiological competencies in an area of complex reality, the formation of the

student becomes more comprehensive and more socially and academically relevant. In addition, reflection on the academic results allows for the validation of theoretical foundations and the rebuilding of knowledge, as well as updating curricula and lines of research.

This is only possible if the impact evaluation emerges from a combination of the definition of generic indicators (established by international agencies in a global context) and specific indicators (built *ex-professo* to evaluate the result of the *vinculación* from the proposal's perspective and in the context in which the action took place). In addition, these evaluations contribute to the construction of metrics for measuring the impact of universities in society, which remain scarce worldwide. The Universidad Veracruzana is in the process of constructing metrics, which we hope will be of use to others in the future.

Finally, the university assumes a commitment toward social transformation for sustainable development. By doing so, the university changes its passive role in the face of social and environmental problems, and commits itself with reality. It is concerned with the problems and takes up its role of active member. This is the clear answer to the question: Where does the university fit in?

ACKNOWLEDGEMENT

The authors would like to acknowledge the support of Margaret Malone, Managing Editor of *Gateways* journal, whose input aided in the development of this article.

REFERENCES

Note: All translations in the article are by the authors.

Campos Ríos, G & Sánchez Daza, G 2006, 'La vinculación universitaria y sus interpretaciones', *Ingenierías*, vol. IX, no. 30, pp. 18–25.

Cazares Aponte L & Cuevas de la Garza, JF 2007, 'Planeación y evaluación basadas en competencias', *Trillas*, México.

Consejo Técnico Vinculación 2015, *Descripción del modelo de vinculación de la Universidad Veracruzana*.

De la Cruz Ayuso, C & Sasía Santos, P 2008, 'La responsabilidad de la universidad en el proyecto de construcción de una sociedad' *Educación Superior y Sociedad*, *Nueva época*, año 13, no. 2, pp. 17–52.

Dutrénit, G 2012, 'Vinculación y el compromiso social de la Ciencia, la Tecnología y la Innovación', paper presented at Foro Consultivo Científico y Tecnológico, Santa Fe, 27 Septiembre. Viewed 8 May 2017, www.foroconsultivo.org.mx/documentos/version_estenografica_dutrenit_epn_27_sep_2012.pdf

García, F, 2000 'Una aproximación al concepto de universidad pertinente', Universidad Centroccidental Lisandro Alvarado, Venezuela. Viewed 8 May 2017, www.ucla.edu.ve/dac/compendium/compendium5/pertinente.htm

Leff, E 2002, *Saber ambiental: sustentabilidad, racionalidad, complejidad, poder*, Siglo XXI Editores, México.

López Montaña C 2005, 'La transformación social'. Viewed 8 May 2017, www.cecilialopezcree.com/k_OldTopics/e_Globalizacion/2005/3_Trimestre/d_Transforma.html

Organización para la Cooperación y el Desarrollo Económicos (OCDE) 2009, *Estudios de la OCDE de Innovación Regional: 15 estados mexicanos*.

ProMéxico website, www.promexico.gob.mx/desarrollo-sustentable/

Pupiales Rueda, BE 2012, 'De la pertenencia social y la pertinencia académica del currículo del programa de licenciatura en artes visuales de la Universidad de Nariño de la ciudad de San Juan de Pasto-Colombia', *Revista Tendencias* vol. XIII, no. 2, pp. 119–46. Viewed 8 May 2017, <https://dialnet.unirioja.es/servlet/articulo?codigo=4242070>

Reyes Ponce, A 2004, *Administración moderna*, Editorial Limusa, México.

Sandoval de Ecurdia, JM & Richard Muñoz, MP 2003, 'Los indicadores en la evaluación del impacto de los programas', México. Viewed 8 May 2017, www.diputados.gob.mx/bibliot/publica/inveyana/polisoc/pdf/0403.pdf

Universidad Veracruzana, 2008, 'Plan general de desarrollo 2025'. Viewed 8 May 2017, www.uv.mx/transparencia/files/2012/10/PlanGeneraldeDesarrollo2025.pdf

Vergel Ortega, M 2015, 'Modelo para evaluar la pertinencia social en la oferta académica de la Universidad Francisco de Paula Santander', *Revista de investigación en administración e ingeniería*, vol. 3, no. 1, pp. 3–18.

Casas de la Universidad references:

www.uv.mx/universo/general/brigadas-de-salud-contribuyen-a-prevencion-de-padecimientos/

www.uv.mx/universo/destacadas/estudiantes-destacan-en-trabajo-comunitario/

www.uv.mx/universo/general/universitaria-rescatara-tradicion-oral-en-el-conejo/

www.uv.mx/universo/destacadas/arquitectura-apoya-desarrollo-urbano-de-ixhuacan-de-los-reyes/

www.uv.mx/universo/destacadas/biologos-comprobaran-propiedades-antioxidantes-de-productos-artesanales/

www.uv.mx/universo/regiones/casa-uv-y-utai-realizaron-concursos-de-altares/

www.uv.mx/universo/general/quiero-ser-un-ejemplo-para-mi-comunidad-everardo-cordoba/