

Use of participatory methods for outreach project proposals

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Abstract— This article presents the implementation of a bottom up approach. This is a participatory method to develop outreach project proposals that solve community problems with the intervention of the university. We present the results of a workshop where wood artisans and professors interacted to identify community problems and potential solutions. Finally, we describe three final outreach project proposals presented by the professors to solve the main problems of the community.

Keywords—participatory method, outreach project, bottom-up approach

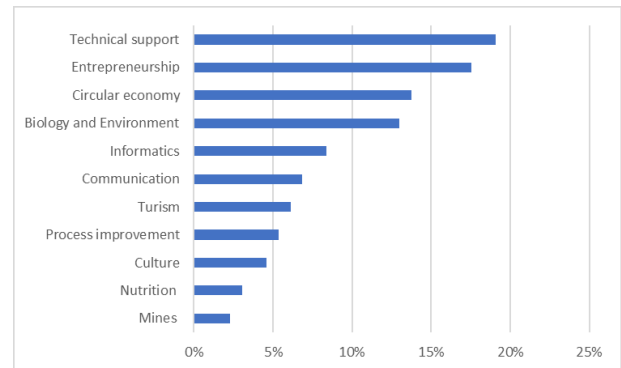
I. INTRODUCTION

Starting from 2010, the Ecuadorian educational law has radically changed. Reforms included: technology and knowledge transfer from universities to vulnerable sectors of the society (rural or marginal), where the university could contribute to their economic development [1].

The local accreditation board has classified Escuela Superior Politécnica del Litoral (ESPOL) as a type “A” university because of its high-quality processes of education, research, and outreach programs. Additionally, ESPOL is the first university in Ecuador with two Bachelor degrees with ABET accreditation: Mechanical Engineering and Computer Science Engineering. By the end of 2017, four more undergraduate degrees will receive the ABET accreditation.

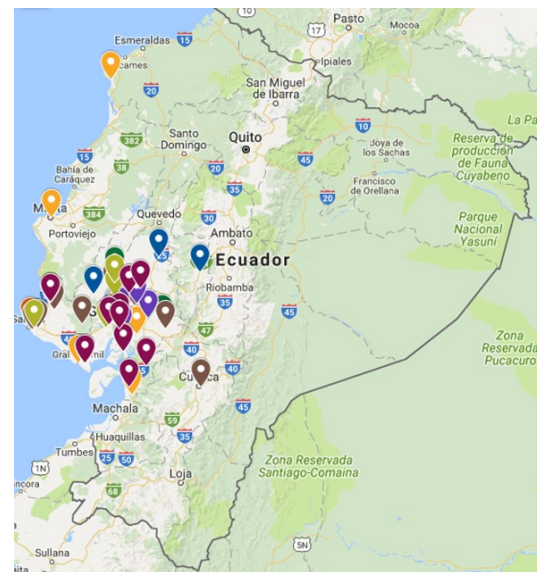
ESPOL is always working for continuous improvement in: education, research, and outreach. Drawing from the new educational law, ESPOL designed its outreach process to motivate undergraduate programs to develop outreach projects where students and faculty work together to serve the society. In 2014, ESPOL got nine outreach projects, in contrast to 2016 when the institution run 124 projects. Fig. 1 shows the classification of outreach projects in 2015 and 2016.

Fig. 1 Classification of ESPOL outreach projects



As shown in Fig. 1, ESPOL performed outreach projects in different areas. Technical support and entrepreneurship are the most common topics. Fig. 2 shows the geographical influence of ESPOL in Ecuador. As we can see, ESPOL mainly contributes to areas close to the main campus in Guayaquil.

Fig. 2 Geographical distribution of ESPOL outreach projects



ESPOL outreach program is an important contribution for the society, even though the social impact has not reach the

expectations of ESPOL authorities. They expect sustainable and repeatable achievements from the outreach projects; however current results show isolated projects in different and distant Ecuadorian communities. ESPOL outreach programs were born with the participation of professors and students from different undergraduate programs without training. Therefore, professors proposed interesting projects based on their professional knowledge and skills. However, those proposals did not necessarily consider the needs from vulnerable sectors of the society.

The aim of this study is to apply participatory methods to propose outreach projects that contemplate community needs as the main input for the proposal development. In this way, the contribution of this paper is to apply existent participatory approaches to develop more meaningful proposals for community outreach university projects.

This paper comprises the following sections: review of concepts about participatory methods and the bottom-up approach, application of the participatory methods in Atahualpa community; and finally the proposal of outreach projects that resulted from the application of participatory methods.

II. LITERATURE REVIEW

A. Bottom-up approach

There are different ways to develop outreach projects proposals, such as the top-down approach where faculty generates projects according to their skills and expertise without taking into account the needs for the development of local communities. On the other hand, the bottom-up approach allows to come up with projects based on the community needs in a participatory process. In this way, projects proposals are built in a horizontal way between the academy and community.

The bottom-up approach enables the generation of projects proposals taking into account the community needs revealed by its members in a participatory and concerted process. This approach is applied in different studies where participatory process is used to identify indicators for strengthening communities [2],[3]. Likewise, the LEADER program for rural development from the Common Agricultural Policy (CAP) encourages participatory processes at the local level. Its main purpose is to include the voice of local agents in the design phase of programs and projects [4]. The main objectives of the bottom-up approach are: (i) to involve stakeholders through their active participation in order to express their needs and generate transparent information for decision-making, (ii) to provide ideas in order to encourage dialogue and concertation, (iii) to achieve consensus in participatory decision making to assure equitable representation of local agents and stakeholders, and (iv) to give the opportunity of decision-making power to communities in order to better integrate the new ideas and proposals in a participatory manner.

B. Integration of community and academic knowledge

Participatory approaches allow the integration of local and scientific knowledge to contribute to a better comprehensive and problem definition. In [5] there is a growing literature suggesting that the combination of local and scientific knowledge could empower local communities. Scientific knowledge tends to be explicit and partly intended to understand and explain observable phenomena, while local knowledge is considered as implicit and informal resulting from observation, practice and collaborative experiences [5], [6]. Therefore, the joint production knowledge is shifting from a one-way transfer of knowledge to a more collaborative approach where different forms of human expertise such as practitioners, members of communities and academic staff contribute to a better problem understanding and its solution.

C. Typologies of participation appropriated for projects generation

There are different typologies distinguished according to: (i) degrees of participation, (ii) nature of participation and (iii) final objectives for the participation [5]. The typology related to degrees of participation is linked to the level of stakeholder's engagement, therefore the level of engagement as a relationship between stakeholders could be "contractual", "consultative", "collaborative" and "collegiate". However, to enhance project implementation, could be classified as "consultative" and "functional" [7], [8], [5]. The second typology is the nature of participation, which is related to the direction of the communication flow between parties. The cases where the information arrives in a single direction are considered as "communication" or "consultation". On the other hand, there are cases in which there is a two-way communication between parties. The latter is known as "participation". In "participation", the information exchange is observed as a dialogue or negotiation. Finally, when the typology takes into account the objective for which participation is used such as "development driven" or "human-centered" participation, it contributes to build capacity and empower stakeholders to define and meet their needs [5], [9], [10]. Therefore, taking into account the relevance for the generation of outreach projects it is appropriate to consider the stakeholders' engagements (community members and faculty). Moreover, it is important to consider the objective of which participation is used, in this case is to empower stakeholders to define their own needs and to pursue the community development.

From the outset, participatory methods should be chosen when: the objectives of the process have been clearly determined, a level of engagement –related to the objectives– has been established, and relevant stakeholders have been selected. The level of engagement is one of the main factors which determine the appropriate method [5]. There are different methods that can be used for communication, for instance: leaflets, mass media or public meetings. Consulting

sources include: documents, surveys and focus groups. Whereas consensus conferences, public meetings with voting, and task-forces with stakeholders are used for participation [11].

In terms of stakeholder participation, the literature has emphasized that the need to empower stakeholders through participation exists. Therefore, when there is an opportunity for participants to make decisions, they could have the capability to engage and empower themselves [5]. In a participatory process, members of the community and faculty share their knowledge despite the group heterogeneity -defined by factors such as: age, gender, background, and level of education-. Participatory workshops using *in situ* flip-charts, enhance relationships and trust between heterogeneous participants, motivating the discussion and facilitating participatory proceedings. In this way, there is a two-way learning process between participants, although the differences knowledges, perspectives and background could be different.

D. Consensus

Reaching consensus is one of the objectives that must be achieved in any participatory action process. Therefore, it is important to know its real meaning in the context of the participatory process. Reference [12] conceptualizes consensus as a method to reach a unanimous agreement. This is done with great effort to meet the needs of the stakeholders. A consensus is reached when everyone can live with what is proposed after all efforts have been made to take into account the interests of the entire group.

Reference [13] indicates that instead of seeking consensus, participatory processes take into account the "paradigm of shared adversity" in which it is specified that the responsibilities are related to decision-making. This deliberative point of view relies on the skills of communication and argumentation rather than negotiation, investigating the variety of positions and expectations of participants [14], [15].

In order to achieve consensus, it is crucial to count with good facilitation skills. For this reason, it is necessary to empathize with the environment where the participatory action is carried out. The following conceptual assessment summarizes the importance of having facilitation skills. An effective facilitator must be perceived as impartial, open to diverse perspectives and accessible. Also, the facilitator should be able to maintain an optimal group dynamic, motivating stakeholders to participate through questions and contributing ideas and interrogations to the discussed topic. Facilitation skills tend to be difficult to learn, but acquiring intuition skills and empathy with the experience gained over the years, it is possible to achieve the facilitating and developing participatory workshops [16].

III. METHODOLOGY

A. Atahualpa Artisans Association

Atahualpa Artisans Association (AAA) was born in 1985 and groups artisans from the city of Atahualpa, province of Santa Elena, Ecuador. These artisans are mainly dedicated to the manufacture of home furniture. AAA started with 150 members even though nowadays there are only 50 active members [17].

Atahualpa is well known in the Ecuadorian coastal region because of the high quality and long durability of their furniture. Customers travel to Atahualpa specifically for buying home furniture. Although, in the last 10 years, the sales have considerably diminished due to the presence of new competitors specially from the city of Cuenca. Furniture manufacturers from Cuenca propose new contemporary designs that attract customers.

AAA is located at the Atahualpa parish from Santa Elena province. It has a territorial extension of 94.14 Km², with a density of 108.84 inhabitant. Atahualpa parish is known as the "Capital" or "Empire of Furniture" due to the traditional elaboration of wood furniture by local artisans. Fig. 3 shows AAA in red inside the Santa Elena Province (in green). In the left lower corner the total Ecuadorian territory is shown.



Fig. 3 Atahualpa community geographical location

From a focus group with the leaders of AAA, we found that the artisans are used to work in an isolated way and they do not appeal to co-working. This situation contributes to the low economic level of the artisans because they are competing against each other. We also found evidence that AAA suffers from lack of negotiation power, difficulty for networking and low productivity levels.

B. Workshop performance

The participatory workshop was developed at Atahualpa Community, with the aim to have as many as associated artisans as possible. The main purpose was to identify and prioritize problems of the community taking into account the expertise and interest of the faculty participating in outreach projects. It is necessary to consider the community's principal requirements in order to meet local needs that at the same time can be developed by the university [18].

At the workshop participated the artisans and faculty and students from ESPOL. The participatory workshop was divided in three stages: (i) Introduction, (ii) Generation of project proposals and (iii) Consensus.

i) **Introduction:** in this stage, all the participants (Faculty and artisans) had the opportunity to introduce themselves and some community leaders described their workshop's expectations. Fig. 4 shows the presentation stage. Afterwards, working groups were defined according to faculty expertise and the particular artisans' interests. Four working groups were defined in this way: 1) Entrepreneurship and marketing; 2) Processes; 3) Wood, and; 4) Tourism and design. These groups were proposed based on previous visits to the area in order to identify the community's main needs, depending on what the academy can offer as outreach projects.

ii) **Generation of project proposals:** for the second stage, faculty took the role of facilitators in each group. Here, they displayed a matrix structure in order to get the main components for the generation of project proposals. In this stage, the role of the facilitator is very important because he or she leads the discussion to discover artisan's needs. Statement of needs could not be broad -because it could move away what the academy can offer-, neither narrow in order to avoid excessive restrictions or limitations. In this stage, we developed a matrix and placed it on the wall with post its. Post its were helpful to keep the confidentiality of the comments and record all the ideas generated. (see Fig. 5). The matrix gathered information related to: problems to solve, activities, methodologies and resources. In other words, the matrix grouped the main components for an outreach project proposal. Table I corresponds to the "Entrepreneurship and marketing group" The matrix shows several generated actions for the artisans' community from the associative and marketing point of view. The facilitators generate a brainstorming with the members of the working groups to generate ideas to fill the matrix.

iii) **Consensus:** the consensus stage enables participants to analyze different matrices from other groups. Each member can argue and come up with new inputs that could improve the matrix and ultimately the project proposals. In this stage, all participants could agree, disagree, or even be responsible of an action described in the different matrices. Any artisan has the chance to approve or disapprove the future intervention from the university. Furthermore, every action is voted to prioritize activities and future actions.

At the end of the participatory workshop, every working group has the necessary elements for developing project proposal, considering local needs in a collaborative and consensual performance from the artisans' point of view. This allows to generate a positive social impact prioritizing the artisans' requirements and providing an environment that prevail a true understanding of artisans' real needs.



Fig. 4 Presentation of the workshop members.



Fig. 5 Consensus of the workshop ideas.

TABLE I
PARTICIPATORY MATRIX FOR THE GENERATION OF
OUTREACH PROJECTS

What?	Who?	How?	Time/Resources	Products
Identify a collective brand with designation of origin	Artisans Faculty of Social and Humanistic Sciences	Focus groups to evaluate brands	3 months Faculty Tutors Students Artisans	Brand proposal and designation of origin
Determine viability of Associative Market	Artisans Faculty of Social and Humanistic Sciences	Business Plan	6 months Faculty Tutors Students Artisans	Business Plan Report

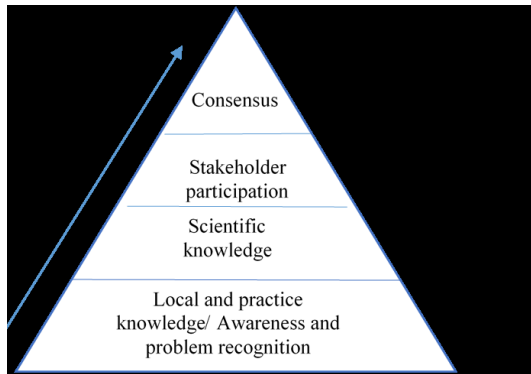


Fig. 6 Scheme of outreach project proposal through participatory approach.

Fig. 6 presents a scheme that summarizes the participatory method applied in AAA to develop the outreach project proposals. The application of participatory methods allows the faculty to consider community needs from their own perspectives, through the development of focus group discussion and problem rankings. Moreover, the accompaniment of the faculty with the scientific knowledge and techniques allows the integration of a learning process that generates a collective and social learning. This process is developed in an articulated manner in order to propose outreach projects assuring rapprochement between the community and the university. Furthermore, these project proposals are generated with the consensus of the whole community's members across the working groups and participating faculty. Fig. 6 shows a picture taken during the consensus stage of the participatory workshop in Atahualpa.

C. Workshop results

With the application of participatory methods, we developed a brainstorming session of artisans' needs and faculty actions. At the beginning, the artisans did not participate a lot; however, with the support of the facilitators, the situation gradually changed. Finally, every person in each of the groups participated actively. This is the big advantage of applying participatory methods instead of traditional approaches. With the help of the participants, the matrix shown in Table II was fulfilled with the solutions proposed to address those needs. These solutions were voted by the artisans in order to rank the ideas and select the ones that are going to be tackled first. Table II shows the actions for each working group and the ranking. Each artisan was asked about their degree of agreement or disagreement; Artisans could also abstain from voting.

TABLE II
RANKING OF THE ACTION SUGGESTED BY THE WORKING GROUPS

Working group	Actions	Agree	Abstain	Disagree
Entrepreneurship and marketing	To improve the associativity	13	2	0
	To perform a product cost analysis	12	3	0
	To do a market research	13	2	0
	To define a common brand	12	2	1
	To perform a commercialization study	12	3	0
	To implement E-commerce	12	3	0
Process	To improve the electric connections	13	2	0
	To have a wood sawmill	13	2	0
	To improve the safety in the wood workshops	15	0	0
	To improve their knowledge about the machinery	12	3	0
	To reduce the production cycle time	14	1	0
Wood	To reuse the black waters for agriculture	11	4	0
	To improve the raw material sources	8	7	0
	To analyze the possibility of getting plantation	9	6	0
	To study alternative wood species for furniture	12	3	0
Tourism and design	To innovate the products by learning wood design	15	0	0
	To strengthen the tourism for Atahualpa	11	4	0

Based on the need of the community, the votes, and the expertise of the professors, we chose one or two actions generated from each working group. In this way, in the Entrepreneurship and Marketing areas; we discovered the needs of associativity improvement and market research of wood home furniture. For the Process group, we have to improve the safety conditions in the wood workshops. For Wood, we have to study alternative wood species for furniture. Finally, for Tourism and Design, we have to innovate the products by learning wood design. Based on the chosen options, we proposed outreach projects as ESPOL. In the next section, we describe the outreach project proposals.

IV. OUTREACH PROJECT PROPOSALS

After the participatory workshop with the members of AAA, faculty and students from ESPOL had a clear idea of the problems of the community and their priority to the members of the Association. Based on the area of expertise of each professor, three outreach projects were proposed:

1. Strengthening the networking skills of Atahualpa Artisans Association
2. New technologies for furniture design
3. Occupational health and safety policy definition for the AAA workshops

Studying alternative wood species for furniture was not considered. It is part of an ongoing research project at ESPOL.

The objective of the project: “Strengthening the networking skills of Atahualpa Artisans Association” is to enhance the networking skills of 50 Atahualpa artisans to eventually improve their negotiation power. In this project, students and faculty from International Business, and Economics worked together. The first milestone of this project was to develop an exploratory analysis of the socioeconomic situation of AAA. Here, market research and focus groups are the main techniques to be implemented by the students with faculty guidance. The second milestone is to design and pilot test the networking strategy for AAA.

The second project is “New technologies for furniture design”. Here, students and faculty from Computers Science Engineering, Electronic and Automation Engineering, Mechanical Engineering, and Web Design apply their knowledge to train the members of AAA in new technologies for furniture design. The first milestone of this project is to train the artisans in the use of design software to create home furniture. The second milestone is to train the artisans in the use of Computer Numeric Control (CNC) machines in which they can apply their designs made in the software.

Finally, the third project deals with Occupational Health and Safety in the workshops of Atahualpa. It is proposed by the faculty and students from Industrial Engineering. This project has as principal aim to define an occupational health and safety policy in order to avoid job accidents in the AAA workshops. The first milestone of this project is to document and standardize operational processes. The second milestone is to identify hazards and estimate the risks. The third milestone is to define and socialize the occupational health and safety policy for AAA.

V. CONCLUSIONS

This study shows the application of a participatory methodology namely bottom-up approach to develop outreach project proposals. There is a strong need to develop outreach projects based on the needs of the community and not only based on the expertise of faculty. This is the reason why we decided to implement a bottom-up approach through a participatory workshop with artisans from Atahualpa, Ecuador and faculty from ESPOL. As a result of this participatory workshop we have identified key concerns of the community and what actions could be taken in a participatory manner. Likewise, at the end of the actions and methodologies generations, it has been developed the consensus between participants (artisans and professors) in order to elaborate the outreach project proposal. Therefore, consensus was achieved during the participatory process in order to meet artisans’ needs, taking into account the interest of the entire group. Moreover, the motivation and the level of engagement of all

the stakeholders is obtained, not only by artisans, but also professors from different departments.

After the participatory workshop, the professors develop three outreach project proposals aimed to strengthen the networking skills, the innovation of products, and the safety issues at the wood workshops. In this way, we completely fulfil the aim of this research which was to apply participatory methods to propose outreach projects that contemplate community needs as the main input for the proposal development.

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