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Original article

Bodybuilding training and formation activities project: a service-learning experience

Proyecto de actividades de entrenamiento y formación en Culturismo: una experiencia aprendizaje-servicio

Projecto de atividades de treinamento e educação em musculação: uma experiência de serviço-aprendizagem

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ABSTRACT

Universities as a space for human formation are called to provide social service to the communities through linkage projects, in which their subjects are articulated through the service learning methodology, which will involve students in the real context and social service with their academic work. The objective of this study was to evaluate the application of the contents of the subject Dual Chair through the service learning methodology, in the project of linkage with society called Grouping of training and formation activities in bodybuilding of the Faculty of Physical Culture of the Central University of Ecuador and the results of the perception of the beneficiaries in the components of physical space and resources, activities, and degree of satisfaction of the project. The study was hermeneutic and documentary. Two techniques were applied: documentary analysis, a stakeholder matrix instrument, and a survey with a bank of 11 questions with a rating scale, applied to 168 beneficiaries of the project based on three components: physical space, resources, activities and degree of satisfaction. It can be said that it has been possible to consolidate the learning of the students in each of the activities developed in the project, in addition the evaluation process has been very well accepted by the beneficiaries, highlighting the value of the service learning methodology in the formation of the students and their link to social service.

Keywords: Service-learning; University; Social linkage; Formation in bodybuilding.

RESUMEN

Las universidades como espacio de formación humana están llamadas a brindar un servicio social a las comunidades a través de proyectos de vinculación, en la cual se articulen sus asignaturas por medio de la metodología aprendizaje servicio, lo que involucrará al estudiante al contexto real y al servicio social con su quehacer académico. El objetivo de este estudio consistió en evaluar la aplicación de los contenidos de la asignatura Cátedra Dual por medio de la metodología de enseñanza aprendizaje servicio, en el proyecto de vinculación con la sociedad llamado *Agrupación de actividades de entrenamiento y formación en el culturismo de la Facultad de Cultura Física de la Universidad Central de Ecuador* y los resultados de la percepción de los beneficiarios en los componentes espacio físico y recursos, actividades, y grado de satisfacción del proyecto. El estudio fue hermenéutico y documental. Se aplicaron dos técnicas: el análisis documental, instrumento de matriz de involucrados, y la encuesta con un banco de 11 preguntas con escala valorativa, aplicadas a 168 beneficiarios del proyecto basada en tres componentes: el espacio físico, recursos, actividades y grado de satisfacción. Se puede decir que se han podido consolidar los aprendizajes de los estudiantes en cada una de las actividades desarrolladas en el proyecto, además el proceso de evaluación ha tenido una muy buena aceptación por parte de los beneficiados, destacando la valía de la metodología aprendizaje servicio en la formación de los estudiantes y su vinculación al servicio social.

Palabras clave: Aprendizaje servicio; Universidad; Vinculación social; Formación en culturismo.

RESUMO

As universidades como espaços de formação humana são chamadas a fornecer serviço social às comunidades, através de projetos de proximidade, nos quais as suas disciplinas são articuladas através da metodologia-serviço-aprendizagem, que envolverá o estudante no contexto real, ao serviço social com o seu trabalho académico. O objectivo



deste estudo foi avaliar a aplicação dos conteúdos da disciplina Cátedra Dual através da metodologia ensino-aprendizagem-serviço, no Projecto de ligação com a sociedade, denominado Agrupamento de atividades de formação e educação na musculação, da Faculdade de Cultura Física da Universidade Central do Equador e os resultados da percepção dos beneficiários nas componentes espaço físico e recursos, atividades e grau de satisfação do projeto. O estudo foi hermenêutico e documental, foram aplicadas duas técnicas: a análise documental e um instrumento da matriz de envolvidos e o inquérito com um banco de 11 questões com escala de valor, aplicado a 168 beneficiários do projecto, com base em três componentes que foram o espaço físico e os recursos, as atividades e o grau de satisfação. Pode-se dizer que tem sido possível consolidar a aprendizagem dos estudantes em cada uma das atividades desenvolvidas no projeto, além disso, o processo de avaliação tem tido uma aceitação muito favorável por parte dos beneficiários, realçando o valor da metodologia de service-learning na formação dos estudantes e a sua ligação ao serviço social.

Palavras-chave: Service-learning; Universidade; Ligação social; Formação em musculação.

INTRODUCTION

Service-learning is a learning methodology, integrated to the syllabus of the subjects or practical analysis units of the career of Physical Activity and Sport Pedagogy of the Faculty of Physical Culture of the Central University of Ecuador; in it the university student makes available to his/her social and community environment the cognitive competences achieved during his/her period of academic formation, with the purpose of successfully facing the social problems previously diagnosed in a specific environment, in which commitment, values, civism, solidarity and respect are included.

In other words, service-learning has its roots in a solidarity project that unites the academic with the social environment, its foundation is born from the university reform of Cordoba in 1918, which joins the functions of university teaching and research with the objective of "*Putting university knowledge at the service of society and make their problems a priority issue of their concerns*" (Aguirre, and Moreno Toledano, 2013).

Simbaña (2015) argues that the link with society is one of the most important functions of the university and constitutes a political and academic tool that allows the articulation in practice of teaching and research as substantive functions of higher education institutions.

Hence, service learning is one of the ways for the university to link with society, it is the space where the competencies developed by students are put into practice, but even more, it is the transitory scenario to propose timely solutions to a more demanding society, unlike the traditional and behaviorist methodologies established in these educational spaces (Posso, et al., 2020).

In this sense, Brito-Gaona et al., (2018) is part of the concern of Latin American universities to transcend institutional boundaries, bringing their action closer to different sectors of society. However, because it is a complex activity that demands from universities a social commitment based on directing actions to solve problems, in these academic spaces it has not yet found a clear and unified concretion for its execution (Universidad Central de Chile, 2016).



In the context of university education, the link with society is an essential function of the educational system at this level, and is harmonized with research and teaching thus founding the pillars of academia (Rodríguez, *et al.*, 2018), thus attesting to the "commitment and pertinence of higher education institutions with current social needs and with the profiles related to the professional in formation" (Brito-Gaona *et al.*, 2018) (Figure 1).



Fig. 1. Articulation of linkage projects with society

Taken from Brito-Gaona, *et al.*, (2018).

In this context, the link with society is properly regulated within the legal agreements that determine the being and doing of university higher education in the National Assembly of Ecuador (2018), specifically in articles 13, 107 and 125. Likewise, article 13 emphasizes that the function of the higher education system is to guarantee the right to education through teaching, research and its link with society, and to ensure increasing levels of quality, academic excellence and pertinence.

By virtue of the aforementioned, the university linkage with the community is made operational through a project organized by a set of activities, duly planned, to meet a specific need or requirement of the social sectors in which the careers intervene, with the participation of teachers and students (Higher Education Council 2015).

In this sense, the Central University of Ecuador in response to the demands of the country's educational system and as part of its academic assets, has developed a set of programs and initiatives for linkage with society, the same are managed from the Directorate of Linkage with Society in which each of the faculties has its own commission, and ensures that the planned activities meet the criteria of pertinence related to the student graduation profile, and the needs of society especially priority social groups (Universidad Central de Ecuador, 2018).

Based on the above, the Dual Chair Analysis Unit was linked to the Project of grouping of training and formation activities in bodybuilding of the Faculty of Physical Culture, because it covers contents such as weightlifting and its basic fundamentals, techniques for the execution of the pull-up, the Olympic pull-up and muscle work, intending to apply this knowledge in the project through the teaching methodology Service Learning. This with the purpose of fulfilling certain indicators that allow the link with society, developing a project to contribute to the formation of students and the community in general. All this with the responsibility in the art of bodybuilding, thus providing the student in



service to be able to assume and live their academic formation, leading him to be in constant contact with the community and thereby achieve institutional prestige.

Through the project of training and formation activities in bodybuilding, it is sought to create a group that encompasses the widest range of activities, facts, knowledge and scientific data related to this discipline, which contributes to the integral development and formation of the body in the participant, all this through three methodologies: the first based on training and exercise systems, the second, the indispensable nutrition within the plans that the bodybuilders carry and the third, the competitive routine programs with the correct use of the body resource and the implements that are needed in this competition.

Based on the above, the objective of this study is to evaluate the application of the contents of the subject Dual Chair through the teaching methodology Service Learning in the Project of linkage with society called Grouping of training and formation activities in bodybuilding of the Physical Culture Faculty of the Central University of Ecuador and the results of the perception of the beneficiaries in the components physical space and resources, activities, and degree of satisfaction of the project.

MATERIALS AND METHODS

This article was based on a documentary and hermeneutic study, because it was based and analyzed the impact of service learning in the project called grouping of training and formation activities in bodybuilding of the Faculty of Physical Culture of the Central University of Ecuador.

Two techniques were applied: documentary analysis and survey; the first one allowed the analysis of the project of training and formation activities in bodybuilding, defining the contributions of the Dual Chair Analysis Unit through the service learning methodology, through a matrix of stakeholders in which the contributions of the interest groups, the perceived problems, the interest in the project and the potential conflicts are established.

In the survey technique, a bank of 11 questions was established with a rating scale of bad [M], regular [R], good [B], very good [MB] and excellent [E], which responds to the question: What is the perception of the beneficiaries in the different components of the project? The validation of the instrument bank of questions was not carried out because they were provided by the Directorate of Linkage with Society of the Central University of Ecuador.

For the information inquiry process, the entire population that participated in the project was used, which was 168 beneficiaries, to whom the instrument was applied based on three components: Physical space and resources, activities, and degree of satisfaction; each one with evaluation criteria as shown in table (Table 1).



Tabla 1. Instrument components and dimensions

Components	Dimensions
Physical space and resources	Facilities for the use of physical space
	Student attendance
	Teacher attendance
Activities	Compliance with scheduled dates
	Fulfillment of scheduled hours
	Availability of time to develop the activities
Level of satisfaction	Quality of activities carried out
	Fulfillment of activities carried out
	Satisfaction of the organization with the implementation of the project
	Students' behavior
	Teachers' behavior

RESULTS AND DISCUSSION

Results of the documentary review

As a result of the documentary analysis of the project, the construction of the stakeholder matrix was proposed as a tool that extracted the varied and conflicting interests of all the groups related to the project through the application of the contents by means of the Service-Learning teaching methodology of the Dual Chair Analysis Unit. This stakeholder matrix allows in the first instance to evaluate the degree of support or opposition to the project of these stakeholders and the resources and mandates available to them (Table 2).



Table 2. - Stakeholder matrix

Groups	Interests	Perceived problems	Interest in the project	Potential conflicts
Faculty of Physical Culture of the UCE.	To massify the activities offered by the project for the benefit of the university community.	Little interest from authorities	Disseminate to the community in general the activities carried out within this project.	Lack of logistical and intervention support.
Teachers of the Faculty	Strengthen their profiles as teachers and increase experience and knowledge for the benefit of society.	Little interest by FCF teachers in developing the project activities	Obtain significant experience and expertise in the specific fields of the different project activities.	Lack of commitment to develop and implement the activities offered by the project.
Faculty students.	Reinforce the knowledge acquired in the field of sports training activities that will help in their professional profile, presentation of exhibition shows and comply with the hours of linkage.	Little interest in participating in the activities offered by the project, leading to sedentary lifestyles, stress and social and emotional problems.	Contribute to the improvement of the quality of life of the participants.	Poor attendance of students and the community in general to the different activities organized within the project.
General and university community participating in the project.	Contribute to the maintenance of integral health through significant learning offered by bodybuilding activities.	Little interest in getting involved in any of the training activities offered by the project.	Contribute with extra material, logistics and promotion of project activities.	Inconsistent attendance by people who already belong to the formed groups.
Community spectators of the shows and events offered by the project.	To offer in its social programs shows of a good professional and educational level.	Little community interest in requesting FCF presentations of this group of exhibition activities.	Create consolidated agreements with the FCF and the grouping of activities in bodybuilding by establishing a specific calendar of presentations.	Limited opening for outings for presentations in competitions.

Groups of students were consolidated for training and formation activities in bodybuilding at the Faculty of Physical Culture of the Central University of Ecuador, which are in constant preparation and guidance of specialist teachers and students of the Dual Chair analysis unit, who carried out the appropriate monitoring allowing to achieve:

- Establish as an official group of the PCF the members that provide counseling services in bodybuilding in an adequate manner and are in constant practice and updating.
- To favor students in the process of their formation with the positive contributions offered by the practice of weight training in all its context.
- Support PCF with identity and promotion.
- Increase the cognitive, technical and physical capacities of students that complement their professional profile.



- Promote exhibition events where students and athletes participate and encourage the practice of this sport.
- Form a PCF group that offers training in bodybuilding aligned with new trends.

The planned training and formation activities in bodybuilding were established based on the professional profile of the teacher in charge and the social demands, focused on the mutual benefit between executors and participants:

1. Implement a training and formation process for students on the parameters and contents of bodybuilding.
2. Training methodology: It will be taken as reference the bodybuilding method which involves several sub-methods, the English expression literally means "body building" referring either to the general development of strength or to the harmonic type of muscle masses. Among the sub-methods, super series, forced repetitions, regressive series, negative repetitions, deceptive repetitions, repetitions after a pre-exhaustion, giant series, burning series and muscular confusion were worked.
3. Competition routines: Compulsory positions, which are evaluated by means of a card that considers the following muscular zones: front double biceps, front dorsal expansion, profile rib cage, back double biceps, back dorsal expansion, profile triceps and front abdominals and legs.

The mandatory bodybuilding poses allow to appreciate all the details of the athletes' physique. It is looked for a harmonious and proportionate physique, well developed and without weak points. In relation to the elaboration of exhibition choreography for competitions and events, a one-minute presentation accompanied by a song is considered with the following elements: dance, poses, aesthetics and elegance.

Survey results

As can be seen in table 2, in relation to the variable physical space and resources in the dimension of facilities for the use of physical space, 51.78 % of the beneficiaries of the project rated the students in service as very good, 25 % rated them as excellent, while 21 % rated them as good and only 1.7 % rated them as regular.

Regarding the students' attendance dimension, 40.4 % gave them an evaluation of good, 32.7 % excellent, while 25 % rated them as very good and only 1.7 % rated them as regular.

Regarding the teachers' attendance dimension, 37.5 % gave them a rating of excellent, 32.7 % gave them a rating of very good, 27.3 % good, while 2.3 % gave them a rating of regular.

According to the results in this variable, a high degree of responsibility is observed on the part of the service providers, this being one of the aspects that promotes service-learning in the students, in this sense Puig (2014) refers that in service-learning one learns to serve the community, but at the same time the service activities become a source of new competencies and values. Learning and service are linked in a circular relationship in which both parties benefit: learning acquires civic sense and service becomes a workshop of knowledge and values (Table 3).



Table 3. - Physical space and resources component

Component	Dimension	M		R		B		MB		E	
		f	%	f	%	f	%	f	%	f	%
PHYSICAL SPACE AND RESOURCES	Facilities for the use of physical space	0	0	3	1.7	36	21.4	87	51.7	42	25.0
	Student attendance	0	0	3	1.7	68	40.4	42	25.0	55	32.7
	Teacher attendance	0	0	4	2.3	46	27.3	55	32.7	63	37.5

Regarding the activities component shown in table 3, in the dimension of compliance with scheduled dates, the in-service students were evaluated as excellent by 61.3 % of the beneficiaries, 26.7 % as very good and 11.9 % as good. Regarding the dimension Compliance with scheduled hours, 48.8 % of the beneficiaries evaluated this aspect as excellent, 27.3 % as very good, 22 % indicated a good evaluation and only 1.7 % indicated that it was fair. In the dimension Availability of time to carry out the activities, 37.5 % gave them an excellent evaluation and 32.7 % of the beneficiaries rated it as very good and 27.3 % as good.

Once again, the evaluation shows that there is a sense of commitment and responsibility on the part of the service providers. In this sense, service-learning strengthens all student competencies at the conceptual, procedural and attitudinal levels (Simbaña, 2015).

Table 4. - Component activities

Component	Dimension	M		R		B		MB		E	
		f	%	f	%	f	%	f	%	f	%
ACTIVITIES	Compliance with scheduled dates	0	0	0	0	20	11.9	45	26.7	103	61.3
	Compliance with scheduled hours	0	0	3	1.7	37	22.0	46	27.3	82	48.8
	Availability of time to develop the activities	0	0	0	0	46	27.3	55	32.7	63	37.5

Table 4 shows that 60.7 % of the beneficiaries rated the quality of the activities carried out as excellent, 17.8 % as very good and 13.6 % as good. Regarding the fulfillment of activities developed, 37.5 % of the beneficiaries gave an evaluation of excellent and 32.7 % of very good, 22.6 % good and only 7.14 % regular. With reference to the dimension of satisfaction of the organization with the implementation of the project, 45.2 % considered it very good, 36.3 % good and 18.4% excellent. Student behavior was



evaluated as excellent by 48.8 % of the participants, 27.3 % as very good, 22 % as good and only 1.7 % as fair. Likewise, the behavior of the teachers was evaluated as excellent by 41.6 % of the beneficiaries, 34.5 % evaluated them as very good and 23.8 % as good (Table 4).

Based on the evaluation received, the **Latin American Center for Solidarity Learning and Service (2016)** emphasizes that in the service-learning practices the student becomes the protagonist in the activities and the teacher ratifies his role as companion, guide and observer. This project methodology enables both actors to lead their own learning, and through active involvement allows them to acquire new knowledge from what they already have, to reflect and use it in other social and communicative contexts, which becomes functional learning (Table 5).

Table 5. - Component Level of satisfaction

Component	Dimension	M		R		B		MB		E	
		f	%	f	%	f	%	f	%	f	%
LEVEL OF SATISFACTION	Quality of activities carried out	0	0	0	0	26	13.6	30	17.8	112	60.7
	Compliance with activities carried out	0	0	12	7.14	38	22.6	55	32.7	63	37.5
	Satisfaction of the organization with the implementation of the project	0	0	0	0	61	36.3	76	45.2	31	18.4
	Student behavior	0	0	3	1.7	37	22.0	46	27.3	82	48.8
	Teachers' behavior	0	0	0	0	40	23.8	58	34.5	70	41.6

CONCLUSIONS

The project linkage of training and formation activities in bodybuilding of the Faculty of Physical Culture of the Central University of Ecuador, in which the contents of the Unit of Analysis Dual Chair were applied through the service learning methodology, shows that it has been possible to consolidate the learning of the students in each of the activities developed in the project, due to the analysis of the groups and their interests, as well as their perceived problems and conflicts in practice.

In addition, the evaluation process has been very well accepted by the beneficiaries, this inference is based on the results obtained in the application of the instrument, such as the case that in the physical space and resources variable in the three dimensions in which the participants were evaluated received a rating among good, very good and excellent, this means that both students and teachers put into practice their developed competencies to demonstrate mastery in the use of the physical space, in addition they were responsible in terms of attendance, this means that there is acceptance and belonging in the actors involved (students and teachers) for the service-learning project proposed by the Faculty of Physical Culture of the Universidad Central del Ecuador.



Regarding the second variable activities, the evaluation received was excellent in all three dimensions, which represents that the service providers (students and teachers) responsibly complied with the dates and times planned, respected the time for the development of the activities, an important aspect because it generates a state of trust, and also allows the beneficiaries to schedule and organize their time to attend the activities, confident that they will be respected in the schedule.

In this same sense, in the variable level of satisfaction, the evaluations received are centered between very good and excellent in terms of the quality of the activities developed, the fulfillment of activities, the satisfaction of the organization with the implementation of the project and the behavior of the students and teachers. The significance of this evaluation in the aspects mentioned above give reference to how assertive the organizers of the project "grouping of training and formation activities in bodybuilding" have been in terms of the organization and implementation of the proposal, the acceptance by the community involved is appreciated, It is also a demonstration of the formative quality of the students of the Faculty of Physical Culture of the Central University of Ecuador in terms of service-learning and the vocation of teachers to be active participants, which guarantees the university transcendence and the link of this with society, thus validating and complying with the requirements of the Ecuadorian Organic Law of Higher Education.

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Authors' contribution:

Edison Santiago Guerrero González: Conception of the idea, database preparation, drafting of the original (first version), article correction, authorship coordinator.

Tyrone Macías Vera: Literature search and review, instrument application, statistic analysis, general advice on the topic addressed, drafting of the original (first version), review of the application of the applied bibliographic standard.

Richar Jacobo Posso Pacheco: Instrument application, review of the application of the applied bibliographic standard.

Mishel Saa Cedillo: Instrument making, compilation of information resulting from the instruments applied, statistic analysis, preparation of tables, graphs and images, database preparation, review and final version of the article.

Ricardo Patricio Játiva Burbano: Database preparation, general advice on the topic addressed.



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