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ASSESSMENT OF ENGINEERING STUDENTS' ACQUIRED AFFECTIVE LEARNING FROM INVOLVEMENT IN COMMUNITY EXTENSION SERVICES

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ABSTRACT

This study determined the level of involvement and acquired affective learning of the Engineering Students from the Institutional and College-Based community extension programs anchored in the Lyceum of the Philippines University (LPU) core values. The Engineering department has high level of students' involvement in the construction of houses in one of the adapted communities of the university and during the outreach programs. The engineering students have greatly acquired the value of Creator-centeredness, Leadership, Integrity and Nationalism from joining the community extension programs. They also enhanced their personal values, attitude towards the community and the spirit of volunteerism. Humility, perseverance and religiosity are the most common characteristics of the engineering students who joined the community services.

Keywords: Affective Learning, Engineering, Student Involvement, Community, Extension Service

INTRODUCTION

Broadening the horizon of community extension is an important role of the academic institutions. Community service has been described as "services which are identified by an institution of higher education, through formal or informal consultation with local non-profit, governmental, and community-based organizations, as designed to improve the quality of life for community residents, particularly low-income individuals, or to solve particular problems related to their needs (Lim, 2011). Developing a community with utmost necessity to get some assistance from different agencies like academic institutions is an act of fulfilling the mission of helping people to uplift not only the standards of living of those underprivileged but it would also provide greater impact to the character and values of the students and employees who take part on this worthy undertaking.

Academic institutions are often criticized for producing graduates who are technically capable but lack the capability for teamwork, effective workplace communication and the ability to react effectively in unstructured and complex situations (Calvert & Kurji, 2012). So therefore, curriculum must be supported by activities which are in the forms of actual experiences outside the classroom that could provide better learning and understanding of the difference between principles and practice. Students enjoy the formal schooling not only to acquire knowledge and skills but most importantly, learning must be reinforced with proper attitude and values that should be integrated in all curricula through community services.

Classrooms and communities require students to assume different learner roles. If students are passive learners in the classroom and active learners in the community, the contrast may challenge and even impede student learning. The solution is to reshape the traditional classroom to value students as active learners (Howard, 2001).

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Affective learning reaches the emotional and belief system aspects of those who facilitate and participate in it (Tooman, 2000). Values play a significant role in everyone's life. The values possessed and practiced by the individual in their personal as well as work life determine the decisions taken and the activities conducted by them. The behavior of an individual is based on the values held individually and collectively (Kaushal & Janjhu, 2011).

Students earn academic credit by demonstrating they have learned course content and skills. This is no different in community service learning courses. Academic credit is not awarded for doing service or for the quality of service, but rather for the student's demonstration of academic and civic learning (Howard, 2001).

Gemmel and Clayton (2009) emphasized that service-learning is based on partnerships. Usually the three main partners involved are educators, colleges and universities, community partners who are organizations or citizen groups outside of the classroom or educational institution, and students who agree to serve and learn within the programs, courses, or projects jointly designed by the educators and community partners.

Implementing service-learning is challenging in light of issues such as changes in student demographics and pressure from existing curricula goals. However, closer community engagement is increasingly important in the long-term goals of the universities (Becket, Refaei & Skutar, 2012). Service Learning (SL) is a proposal which emerges from the volunteer service to the community and from skills acquisition, combining them in a single articulated project (Amat & Mirave, 2010). Student in general indicated existence of intention to do communal service voluntarily but the ultimately they are more prone to do due to the requirement of the college and the need to fulfill the credit hour (Abdullah & Hwa, 2012).

Commitment from departments and colleges, diverse calendar agreements, curricular mapping, mentor and faculty training, a sense of community, adequate physical space, technology, and community relationships were all identified as critical resources for a successful program (Bridges, Davidson, Odegard, Maki & Tomkowiak, 2011). LPU has initiated several programs like providing housing to homeless families, gift giving and some literacy programs. Likewise, community service in LPU is very evident in the course National Service Training Program (NSTP). The Office of the Student Affairs is also very supportive in the community services of the university in cooperation with other government and non-government agencies that advocate environmental preservation and protection.

Meanwhile, the College of Engineering also provides College – Based Community Extension Projects such as Math Tutorial for Intermediate Pupils, Basic Welding and AutoCAD Courses which aimed to educate the community. Literacy plays a key role in the process of development, therefore, without literacy; a community faces many challenges to improve its quality of life (Zolfaghari et al, 2009). Engineering students especially the organization officers under the college are very supportive to spend time in conducting Math tutorial to the pupils. During summer, Mechanical and Industrial Engineering students assisted the community extension participants in Welding Course while Computer Engineering students facilitated the Basic AutoCAD Course. They were asked to join voluntarily in different programs where they can share their knowledge and skills in Mathematics, AutoCAD and Welding programs.

This present study would like to investigate the relationship of the acquired affective learning in terms of Creator-centeredness which has something to do with the spirituality of the students, Leadership, Integrity and Nationalism to the result of the Measure of Character and Personality which is popularly known in the Philippines as *Panukat ng Ugali at Pagkatao*

(PUP) given by the University Counseling and Testing Center during the month of June to all engineering. Gender differences on the variables cited in the study were also examined. The result of this test would provide better understanding and interpretation of the characteristics of the engineering students who joined the community services.

METHOD

This study used the descriptive research design. Engineering students who joined the Community Extension Programs of the LPU and the College of Engineering served as the respondents of the study.

Participants

There were 254 Engineering students served as the respondents of the study who were enrolled during 2nd Semester, SY 2012-2013 and who joined even once in any of the community extension projects of the institution or the college.

Data Collection Instruments

A researcher-made survey questionnaire served as the main instrument to gather necessary data for the study. This research focused on the level of participation of the engineering students in the community extension programs, as well as the students acquired affective learning from the activity anchored in the LPU core values and other aspects of development such as personal values, attitude towards the community and volunteerism.

The instrument was tested the reliability using the test-retest method to the student – respondents not included in the study. The researcher administered the pilot testing personally. After a week, the researcher asked the same group to answer again the same set of questions. The computed 0.81 Cronbach's alpha signified that the questionnaire was acceptable based on "rule of thumb" which lies within the range of "Good" (George and Mallery, 2003).

Documentary analysis was also utilized to gather data of the result of PUP from the office of the Counselling and Testing Center (CATC). PUP is a standardized test written by Dr. Virgilio G. Enriquez together with the National Science and Development Board (NSDB) as a sponsored research project in the early 1970s which sought to construct a test in Filipino that measured Filipino-oriented traits, behaviors, and attitudes, primarily to identify inventive talent. Out of 43 trait scales and identifier items, only 11 items were considered in the present study as relevant to the community extension activities such as: Perseverance, Courage, Thoughtfulness, Timidity, Generosity, Humility, Being Responsible, Diligence, Voluntariness, Religiosity and Helpfulness.

Procedure

The survey questionnaires were administered to respondents during Second week of March, 2013 before the final examination. All students were informed regarding the objectives of the study and the answers gathered from the survey will be treated with strict confidentiality and will only be used in the purpose of the present research. They were given three (3) to five (5) minutes to answer the whole instrument.

Data Analysis

Weighted mean, percentage, rank, Pearson-Product Moment Correlation Coefficient, T-test and Analysis of Variance were used to analyze and interpret the results of the gathered data.

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RESULTS AND DISCUSSION

The construction of Houses in Sotero H. Laurel (SHL) Restoration Village and Gift Giving Outreach Programs are community extension activities of the entire university wherein every student of the College of Engineering has a chance to participate in the project.

Math Tutorial is another project of the department with 34.6 percent of the students already participated on this community extension activity. It is being held during afternoon from 4:00 to 5:00, but since most of the engineering students still have classes during that period, that's why they cannot join the activity. On the other hand, Welding course is a specialized program wherein BS Industrial Engineering and BS Mechanical Engineering students can only be allowed to participate due to the nature of the project is distinctive to their knowledge and skills while AutoCAD Course is another exclusive community extension project for BS Computer Engineering Students.

The community extension of the university as well as the college based projects have helped the students with a great extent to provide clear goals and life's purpose leading to the enhancement of their spirituality and reflect on the many blessings that the Creator has given them while there is a moderate extent on helping them promote spiritual growth through exercising religious activities in conducting community services. Students realized the value of sharing their time and effort to the community is a sign of giving back the blessings to the Great Provider.

There is a great extent in influencing their co-students to become volunteers, exercising their leadership capabilities in helping people and realizing the sense of social responsibility in understanding the needs of others. Engineering students have greatly acquired the value of leadership from joining the community extension programs of both college and the institution. Exercising their freedom to follow what they wanted to accomplish through leading the community towards an end of achieving something that would create an impact to the lives of the needy is the totality of what leaders aimed to bring about.

Engineering students learned greatly from the community extension projects to strengthen the value of sincerity in helping others and to enhance the virtue of determination and perseverance in making others feel better. They have greatly acquired the value of integrity. The act of truthfulness in the activities conducted during community service is the foremost attribute for setting the minds of the students that they are not only doing the project just for the sake of completing the course requirements but to act with sincere thought of sharing their time with the people in the adapted community.

These projects have helped them with a great extent to extend their assistance of helping the government in their own little ways to alleviate the poverty of the Filipinos in the vicinity of the University and express a warmth feeling of acceptance as being hospitable to the beneficiaries while there is a moderate extent on cultivating the values of being nationalistic through giving great importance in uplifting the lives of other Filipinos.

Acquired Affective Learning In Terms of Characteristics Related to Community Service

Study reveals that there is a great extent on the contribution of these programs in developing the personal values of the participants to be responsible in making decision for the sake of other people, be sensitive to the needs of others, and be proactive in promoting camaraderie through helping others. The community projects taught the students not to be self-centered or self-seeking but rather to become altruistic and self-sacrificing.

Helping build a harmonious working relationship and increasing the level of awareness

regarding social issues were the aspects of attitude towards the community that were developed to the engineering students. These programs have greatly contributed to help them enhanced their attitude towards the community. These activities showed the clear image of reality that students should contribute to lessen the pain of emptiness of those people who surround them from the comforts of the university.

Experiencing the privilege of being part of worthy undertaking of helping the community is the foremost affective learning acquired in terms of volunteerism by most of the respondents followed by opening greater opportunities for sharing enormous gifts from God and enhancing their confidence in dealing with people. However, developing the spirit of volunteerism through contributing something charitable to the society and apply their knowledge and skills through teaching the community extension participants obtained the least weighted mean scores. Students are aware of taking their part in the realization of bringing the quality of life that the community should have. Developing student-volunteers is one of the goals of community extension programs for the students to enhance their sense of responsibility.

Table 1 reveals the extent and difference of engineering students' characteristics when they are grouped according to gender.

Table 1. Extent and Difference of Engineering Students' Characteristics when They Are Grouped According to Gender

Characteristics	*Male*	*VI*	*Female*	*VI*	*t-value*	*p-value*	*Remarks*
Perseverance	3.65	GE	3.57	GE	.872	.385	NS
Courage	2.47	LE	2.28	LE	2.221	.027	S
Thoughtfulness	3.18	ME	3.48	ME	-3.639	.000	S
Timidity	3.30	ME	3.40	ME	-1.747	.082	NS
Generosity	2.96	ME	2.83	ME	1.798	.074	NS
Humility	3.66	GE	3.71	GE	-.854	.394	NS
Being Responsible	3.60	GE	3.55	GE	.713	.477	NS
Diligence	2.47	LE	2.58	ME	-1.307	.193	NS
Voluntary	3.13	ME	3.05	ME	.814	.417	NS
Helpful	3.15	ME	3.14	ME	.148	.882	NS
Religious	3.54	GE	3.70	GE	-1.026	.306	NS

There is a great extent on the characteristics among the engineering students in terms of humility, perseverance, religiosity and being responsible. However, there is a moderate extent on the characteristics of helpfulness, voluntariness, generosity, diligence and courage. Engineering students still need to improve some of their qualities as students to become well-refined and well-shaped future professional through community extension activities.

Male Engineering students have significantly higher extent of courage compared to female students, although the extent of courage between groups is less extent, male respondents' courage still shows considerable variation. Meanwhile, thoughtfulness is another characteristic of the engineering students that demonstrates significant difference, wherein

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female students have significantly higher extent of thoughtfulness compared to male students, though still, the degree of their characteristics is moderately extent, nevertheless, female respondents' thoughtfulness shows substantial variation against male students.

Table 2 reveals the level of the Engineering Students' Acquired Affective Learning Anchored in LPU Core Values and Characteristics Related to Community Service When they Are Grouped According to Gender

Table 2. Level of the Engineering Students' Acquired Affective Learning Anchored in LPU Core Values and Characteristics Related to Community Service When they Are Grouped According to Gender

Core Values	*Male*	*Female*	*t-value*	*p-value*	*Remarks*
Creator-Centereness	3.80	3.85	-.595	.553	Not Significant
Leadership	3.68	3.91	-2.301	.022	Significant
Integrity	3.66	3.97	-2.561	.011	Significant
Nationalism	3.48	3.79	-2.899	.004	Significant
Community Service Related Characteristics					
Personal values	3.58	3.91	-3.262	.001	Significant
Attitude Towards the Community	3.58	3.89	-3.028	.003	Significant
Volunteerism	3.63	4.03	-3.765	.000	Significant

Male and female engineering students have no significant difference in terms of acquiring affective learning in terms of Creator– Centeredness. This signifies that different levels of learning were obtained by the engineering students from the influence of community extension projects in developing more the value of Creator-centeredness.

Female engineering students have significantly higher acquired affective learning perception in terms of the three mentioned variables compared to male engineering students. They have significantly higher appreciation on the community extension activities to the development of their core values.

Meanwhile, significant differences were also revealed in the extent of contribution of the community extension services to the personal values, attitude towards the community and volunteerism between male and female engineering students. Female engineering students have significantly higher acquired affective learning perception in the influence of community extension programs to the development of their characteristics related to the community extension service. They have significantly greater awareness in the importance of the extension projects being offered by the university to the adapted communities.

Table 3 reveals the relationship between the acquired affective learning and the characteristics of the respondents based on PUP.

Table 3. Relationship between the Acquired Affective Learning and the Characteristics of the Respondents Based on PUP

Characteristics Based on PUP	*Creator-centeredness*		*Leadership*		*Integrity*		*Nationalism*	
	r-value	*Sig.*	*r-value*	*Sig.*	*r-value*	*Sig.*	r-value	*Sig.*
Perseverance	.006	.922	.078	.234	.071	.281	.063	.340
Courage	.121	.065	.048	.462	.015	.818	.004	.950
Thoughtfulness	-.050	.446	.055	.403	.006	.926	-.031	.639
Timidity	*-.156(*)*	.017	-.066	.317	-.107	.102	-.131(*)	.046
Generosity	-.027	.678	-.067	.306	-.056	393	-.096	.145
Humility	-.112	.088	-.032	.631	-.022	.738	-.055	.400
Helpful	-.035	.591	.011	.862	.009	.888	.025	.701
Being Responsible	-.044	.500	.086	.192	.109	.097	.095	.145
Religious	.045	.497	.098	.135	.097	.140	.074	.263
Diligence	.074	.260	.098	.135	.088	.178	.013	.840
Voluntary	-.016	.806	-.105	.234	-.023	.725	.037	.572

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Engineering students with low level of timidity have higher acquired affective learning perceptions on Creator-Centeredness and Nationalism while those with the high level of timidity, they have lower acquired affective learning on these two mentioned LPU core values.

There are no significant relationship in terms of the acquired affective learning in leadership and integrity against the characteristics of the engineering students based on the result of *Panukat ng Ugali at Pagkatao* (PUP). This means that students with different levels of characteristics on the following variables cited in the study have also various perceptions in terms of the impact of the community extension to the development of their leadership and integrity.

Table 4 reveals the relationship between the characteristics of the respondents based on the PUP and characteristics related to community service.

The perceived contribution of community extension in enhancing the characteristics of the students in terms of volunteerism is not significantly related to any characteristics taken from the PUP. This implies that the engineering students from various levels of characteristics have different perceptions on the impact of community extension activities towards the

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enhancement of their values in volunteerism.

Table 4. Relationship between the Characteristics of the Respondents Based on the PUP and Characteristics Related to Community Service

Characteristics Based on PUP	*Characteristics Related to Community Service*					
	Personal Values		*Attitude Towards Community*		*Volunteerism*	
	r-value	*Sig.*	*r-value*	*Sig.*	*r-value*	*Sig.*
Perseverance	*.141(*)*	.032	.105	.110	.063	.336
Courage	.011	.871	.029	.654	-.026	.690
Thoughtfulness	.028	.670	-.001	.988	.029	.659
Timidity	-.088	.180	*-.152(*)*	.020	-.113	.084
Generosity	-.050	.443	-.053	.422	-.083	.206
Humility	-.041	.538	-.002	.974	.007	.920
Helpful	.045	.498	.076	.247	.116	.077
Being Responsible	*.140(*)*	.032	.109	.095	.109	.097
Religious	.032	.629	.047	.472	.119	.071
Diligence	.081	.218	.056	.394	.049	.454
Voluntary	-.035	.599	-.001	.988	-.012	.855

Engineering students with higher level of perseverance and sense of responsibility have also higher perceptions on the impact of community extension projects to their personal values. However, those students with low level on the two mentioned characteristics have also lower perceived impact of community extension.

Furthermore, Engineering students with low level of timidity have higher perceived contribution of community extension to their attitude towards the community. The conducted Community Extension activities helped them increase their positive attitude towards the community. However, those students with high level of timidity have lower perceived impact of community services to their attitude.

CONCLUSION

Engineering students must be encourage to participate in the community extension projects through providing extrinsic motivation like giving incentives or award of recognition and appreciation for joining the activities. The department must provide clearly stated goals and objectives of the activity and supply questions for reflective essay to enhance the quality of characteristics and values acquired by the students from the community extension programs. Reflection activities guide students in examining their own perspectives and assumptions about themselves, their community, and the organizations and people they are working within the community, as well as the impact of these perceptions on their learning and the service

experience (Cruz, 1995; Eyler, Giles and Schmiede, 1996; Mintz and Hesser, 1996; Rice, 2006). Students must relate their community extension activities to the application of their day-to-day routines in the classroom and interaction with co-students and university employees.

Allow the students to facilitate in the Math Tutorial, Welding and AutoCAD Courses to continuously share and enhance their knowledge and skills learned from LPU to the adapted community. Conduct team building workshops that would address the following attributes: spirit of volunteerism, generosity, diligence and courage. Allow the students to plan and facilitate their own community extension related activities to apply the value of leadership to their every day assignments and tasks as responsible Filipino students.

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