'THE PATH LESS TAKEN': DESIGNING, IMPLEMENTING, AND EVALUATING A SERVICE-LEARNING COURSE FOR ENGINEERING COLLEGE STUDENTS IN LIBYA

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Abstract:

This research paper describes the theoretical and pedagogical background and results of the trial of implementing a service-learning course for 18 engineering students at a public Libyan engineering college. This study fills a gap in the literature related to service-learning practice and outcomes in Libya and the Arab world in general. The results of the study, based on student reflection journals, focus groups, and final course outcomes, showed that students reported academic gains in terms of improving their academic and social skills. They also report feeling empowered personally, engaged socially, and having a stronger sense of civic engagement. The initial results of the course are promising, and an expansion of it combined with a long-term study will continue in future semesters.

Keywords: service learning, academic skills, social skills

1. Introduction

Education in general involves guiding students from learning the knowledge to applying it in the real world. In addition to developing students' intellectual skills, experts are concerned about the impact of education on social life. Educators highlighted the importance of civic engagement, community service and social justice. However, in the Libyan educational system, the context of this pilot study, there is a lack of courses or programs that provide learning in context of real life situations.

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One of the most significant issues that the recent changes in Libya highlighted is the necessity of educated citizens to build civil society *(Lindsey, 2011)*. Unfortunately, there are challenges that face higher education in Libya such as the unstable political situation in the country, lack of clear plans and objectives in higher education, lack of qualified teachers *(Suwaed and Rohouma 2015)*. As a result, civic education such as service-learning is not yet recognized as an important pedagogy. This study aims to investigate the trial of implementing service learning at the college level. It aims to investigate students' attitudes towards it.

2. The importance of service learning in the Libyan society

The importance of helping people in need in Libya is highly influenced by culture and religion. As an Arabic and Islamic country, Islam influences the way Libyan think about charity work. This is because Islam is not only a religion, but a comprehensive way of life. The prophet of Islam is Mohammed who has a great influence upon all Muslims and serves as a role model for those of Islamic faith (Esposito 2002:10). It is a well-accepted notion among Muslims that helping poor people is important in Islam. In addition, in the Quran, the wholly book for Muslims, *Zakat* and *Sadaga* are widely appreciated.

Zakat is the amount of money that every financially able Muslim, male or female, has to pay to support poor people. It is one of the five pillars of Islam and it is obligatory to be paid to eight categories of people who are defined as "*The alms are only for the poor and the needy, and those who collect them, and those whose hearts are to be reconciled, and to free the captives and the debtors, and for the cause of Allah, and (for) the wayfarers; a duty imposed by Allah. Allah is knower, Wise.*" (The Holy Qur'an 9:60).

The prophet Mohammed encourages Muslims to give *Sadaga*. As it is indicated in his saying, *'Charity is a necessity for every Muslim*.' He was asked: '*What if a person has nothing?'* The Prophet replied: *'He should work with his own hands for his benefit and then give something out of such earnings in charity*.' The Companions asked: *'What if he is not able to work?*' The Prophet said: *'He should help poor and needy persons*.' The Companions further asked '*What if he cannot do even that?*' The Prophet said *'He should urge others to do good*'. The Companions said *'What if he lacks that also?*' The Prophet said *'He should check himself from doing evil. That is also charity*.'

The Islamic emphasis on Zakat and Sadaga motivates Libyan parents to encourage their children to help others and participate in volunteer work. However, these concepts are not fully integrated in schools or in the curriculum. The only

available activity is organizing a volunteer day once in the school year to clean the back yard of the school or the surrounding area.

3. Literature Review

Service learning is a pedagogy that integrates community service with academic learning. It promotes civic responsibility, strengthens communities by emphasizing interaction with community. Reflection of students' experiences enhances their learning and communication skills.

According to Seilestad (2014), *'service-learning as a theory and pedagogy has deep roots, and the 20th century's developments in education specifically provided a milieu of thought and practice that nurtured the development of service-learning'*. In the early 19th century, Dewey *(1930)* laid the groundwork for the emergence of service-learning and other engaging educational practices by urging educators to consider the world outside the classroom as an area ripe for engagement. Service-learning as a developed pedagogy evolved as part of a general shift in education from a teacher-centered to a student-centered approach.

3.1 Characteristics of Service-Learning

A service-learning model consists of three main components: **Knowledge** (a deep understanding of community issues); **Compassion** (an ethics of care); and **Action** (meaningful interactions between students, mentors, and community stakeholders). Four stages of service-learning have been identified: Preparation (teachers and students work together to plan the service-learning experiences), Action (the plan is carried out), Reflection (learning and experiences are integrated with awareness and personal growth) and Demonstration (what is learned is evidenced), (Learn and Serve Clearinghouse, 2010).

According to Albarwni (2013), the concept of service-learning requires that it meets the needs of the community, that it is coordinated by an institute in partnership with the community to enhance the academic curriculum. In addition, it provides structured time for students to reflect on the service experience and more importantly, it provides an opportunity for students to experience civic engagement, (Billing, 2000; and Learn and Serve Clearinghouse, 2010).

3.2 Benefits of Service-learning

In order to study the results of service-learning, service-learning researchers and practitioners focused on specific outcomes, which can broadly be categorized as: (a)

academic, which includes improvements in grades as well as general cognitive abilities; (b) personal, which addresses changes in the students' view of their own progress; (c) social, which covers changes in the students' ability to work with others; and (d) citizenship, which speaks to changes in the student's knowledge of his or her role as a citizen *(Conway, Amel, & Gerwien, 2009; Koliba, 2000).*

In order to assess the benefits of service-learning, Conway, et al *(2009)* conducted an analysis of 103 service-learning samples and found that service-learning did produce outcomes in each of the four categories: academic improvements, personal and citizenship changes and social outcomes. The findings of this study support the findings of the previous studies that showed overall benefits for service-learning but stressed that the results depend highly on the quality of the service-learning programs (*Billig, Root, & Jesse, 2005).*

Another study about the service-learning outcomes was the Civic Enterprise's (2008) study. This study investigated the effect of service-learning on dropout students. The findings of the study showed that service learning increased students' interest and motivation to learning. These findings support the claim that service learning has benefits to all students not just those who are interested to attend service learning courses.

3.3 Service-Learning in the Libyan educational Context

In the Libyan context, the educational system has undergone many reforms since independence in the 1950s. The Ministry of Education is aware of the deficiencies of the educational system and has taken many steps to improve its quality. For example, the national educational curriculum embraces civic education and has created a 6-year series of lessons about this topic, "national education" as part of the social studies curriculum. This curriculum starts in the fourth year of elementary school (students aged 10 years old) and extends to the third year of preparatory classes (Libyan education has three phases: primary for six years, preparatory for three years, and secondary for three years). The social studies curriculum covers three broad topics: history, geography, and the national education.

The curriculum begins with core knowledge concepts such as "Libya' location, official language, flag', "school and family," and "principles about how to live in society," which are presented in a way that is attractive to younger students using pictures, simple text, and short stories. These concepts are built on and expanded throughout the 6-year sequence, ending with chapters in the last year that address, as two broad themes, "social justice" and "the government structure'. Naturally, the presentation of the material gains in complexity in terms of language use, exercise and

topics for discussion as students' progress. The curriculum also focuses on building the students' knowledge of their country's famous intellectuals, national events and legal and administrative systems.

However, despite these promising developments in the curriculum, academic knowledge about service-learning and civic engagement is still developing. According to Kandil *(2004:41)*, "*In the Arab world, systematic knowledge of civic service in this sense does not yet exist. There have been no comprehensive studies, which limits our ability to summarize overall patterns and draw conclusions about the forms and nature of service*".

This study is an attempt to contribute to the literature in this area. Although it is not intended to reach the level of a comprehensive study of the entire service-learning field in Libya or other Arab countries, this study aims to provide evidence of the effectiveness of service-learning for Libyan college students working together to improve their own academic, personal, social, and civic outcomes.

4. Methodology

This pilot course was built on a previous study conducted in the College of Arts, third year English language students and the initial results showed predictable and positive gains for English language students. It was a qualitative study that investigated the outcomes of service learning on students' academic and social skills. However, in presenting the findings of that research locally, some educators questioned the possibility of implementing service learning in other colleges. In their opinion, English language students are influenced by the American and British culture that is why they were engaged in service learning. Thus, I decided to continue in my trial of the course but with different students, the engineering students.

As this course was in a pilot phase during the fall 2015 semester, there are mainly two research questions:
1. To what extent, we can implement service learning in Libyan university level?
2. What are the gains that might the participants of this course get?

Since service learning is a new approach in Libya (and perhaps in the region), and is not well understood by educators. Answering these research questions might expands the service-learning literature since the majority of service-learning studies have been conducted in the United States with only few from the Arab world and none, to the author's knowledge, in the Libyan context.

4.1 The context of the study

Sabratha Faculty of Engineering is a small, public Libyan Faculty. It was established in 1991 in the city of Sabratha which is located on the north-western coast of Libya. a city which is well known for its Roman Archeological remains that are designated as a UNESCO World Heritage Site. Sabratha Faculty of Engineering provides a bachelor programs in Engineering. Sabratha University has (1350) undergraduate students, with (70) faculty members and (107) non-academic staff.

4.2 Participants

There were 18 college students. In terms of gender, there were 14 males and 4 females. Students varied in their levels from semesters 6-9. Their age ranged from 21-23 years old. These students study in different engineering departments: 4 from the Department of Electrical and Electronic Engineering, 5 from the Department of Civic Engineering, 4 from the Department of Chemical Engineering, 4 from the Department of Mechanical Engineering, and 1 from the Environmental and Natural Resources engineering. The students have been chosen on voluntary bases. They read the announcement of the course and registered in the training center at Sabratha Faculty of Engineering.

4.3 The pilot course

Recognizing the needs of the Libyan college students, 'Yes We Can Competition' was created, designed and implemented along with service learning course. The main aims of the course are:

- To improve students' soft skills (time management, creativity, teamwork, communication)
- To develop their social skills (communicating, trusting others, empathy, accepting different opinions)
- To enhance their citizenship and learn more about their community (issues, challenges)
- To inspire and encourage others to volunteer and help people in need
- To broaden students' perspectives on learning.
- The competition is mainly about applying the knowledge that they have from their engineering courses in real life situations.

To meet these objectives, 'Yes We Can' model draws conceptual design elements from ecological approaches to human development and youth-empowerment models. The model allows for a smooth, purposive interaction between (for example, individual, family, peers, community groups, and social institutions). Like other youth-focused courses, Yes We Can approach suggests that '*to improve youths' situation, one needs to take*

a community approach that develops youths' capacities, improves adult perceptions of youth, and increases youths' positive role within their communities' (Wessells and Monteiro 2001: 128).

The service learning course was designed to take place thorough the 14th week semester, with 18 students, hour long sessions. College students who were enrolled in one of the departments were invited to volunteer for the service learning course during the fall 2015.

4.4 Orientation

Before the 18 students begin their training, they are hosted in the Training Centre for a one-day orientation, when they learn about the components, goals, methodology, and activities of the competition.

Participants were presented with the required information about service learning so that they are well informed about what will be required for their participation and ultimate success.

4.5 Training

Then, I started with the students who registered in the course by introducing the course. We agreed to have a meeting each Sunday weekly and another meeting on Wednesday when needed.

The training lasts for three days. During these sessions, participants learn about topics such as service learning concept, examples and benefits, leadership principles, communication, team building, motivation, creative thinking, and time management. Content is delivered through skills development and the opportunity to experience the content for confidence building and long-term retrieval. The participants' understanding of the theoretical content and skills sets is facilitated by trainers' use of a varied set of enjoyable teaching strategies and techniques. Games, cooperative groups, project work, and discussions kept the students interested and motivated.

As part of the training, students learn the basics of teamwork and interpersonal communication. These lessons were of immediate importance, given that most participants did not work in teams before and did not know the other participants with whom they were in training. Furthermore, the climax of the training is the placement of participants in 3 cooperative groups through which they will plan, design, and implement a project. The training and service activities created a space for the exchange of ideas and formation of groups that are otherwise not possible:

4.6 Placement

The 18 students who completed the basic training are given the chance to practice the skills that they have learned by participating in 'Yes We Can 2 competition'. They were divided into three groups of six. Each group has six members except group 3. They continued with 4 members as two students dropped out due to their busy schedules.

In fact, one key element of 'Yes We Can service-learning model is the requirement that youth-led initiatives be developed and implemented by a small group of at least six students. This requirement enables students to build skills while working with others, to learn about individuals and to establish social networks among other colleges where social opportunities are limited. The learner-centered nature of 'Yes We Can service-learning model' is most clear in its youth-led initiatives, where young people design and implement their own projects, receiving ongoing mentoring from trainers.

Each group is guided by "the leader" and "the assistant" and I explained their roles and that they need to contact me for questions and permissions. The group that scores the highest points will automatically win the competition. The main components on which the projects are judged are listed below:

1. teamwork (group meetings, division of roles, cooperation among team members)
2. creativity (the idea)
3. discipline (instructions/ following the rules)
4. time management (the division of task according to the days of the week, deadline)
5. task achievement (overall evaluation of the project as a whole)
6. report (written description of all the stages)
7. presentation and final report of the whole experience at the end of the course.
8. whether the project responds to a community need and priority;
9. the possibility of developing and sustaining the project

After explaining the roles and responsibilities and the criteria of evaluation, the following tasks were giving to the three groups with agreed deadline.

4.7 Tasks

The competition is divided into three stages. In each stage, students have to perform the given task.

The first task was educational. Students were asked to apply their engineering knowledge to help other students. Then, the social task was about finding ways to collect money in order to draw the smile and help poor people in their neighborhoods.

The third task was to find a way to help one person in their city or college that needs support or passing through hard time.

After those three stages are done, students will present their tasks at the Faculty of Engineering. Within this part of evaluation, students are asked to present their projects. The students should be able to defend their opinions as well as to answer the questions which the audience will ask.

In addition to student participants, the author worked closely with a team of one teacher in Sabratha College of engineering, as well as one staff member from Western Washington University. The program had the support of the International Cooperation office at University of Alzawia, the Dean of Sabratha Faculty of Engineering and the Training Office director.

4.8 Data Collection

Several methods were used to collect data about the students' reflection and evaluation of the program. After each stage, journals were used by the students. For evaluation, a focus group discussion was held with the students. In addition, at the end of the program, the students were asked to perform a final reflection and evaluation on the program through student surveys.

4.9 Data Analysis

The author read through the reflection journals and grouped the responses based on the academic, personal, social, and civic areas. In addition, the author collected and analyzed the results of the focus group discussions.

5. Findings and Discussion

5.1 Research Question 1: To what extent we can apply service learning at the Libyan university level?

In the Libyan context, which is characterized by the traditional way of teaching, where students are mostly blamed for being passive and that they mainly study to pass exams, these results may be particularly striking. One of the surprising findings is that the results of the course exceeded my expectations in terms of student commitment, interest, and final outcomes. Considering that the majority of students had never previously taken part in a service learning course. The encouragement from the dean of the engineering college, staff members and students' parents and friends in this course may have pushed the students toward working really hard and the high commitment of the course.

Simply starting the course required a great deal of hard work, discussions and arrangements. At the beginning, it was unclear how many students would commit to the course considering students' busy schedule of lectures and exams. Having 18 students complete the course and competition with only two students dropping out throughout the semester was a surprise. In addition, the level of students' satisfaction as reflected in their reflection, the weekly discussions and attendance of meetings, and the high performance in the presentations day, validated my attempt to design a high-quality service-learning course that can be implemented at the college level in the Libyan universities. Finally, the outcomes of the course and the final presentation of the student' projects were impressing not just for me as trainer and author but for the university administration and all the audience.

In sum, the amount of time in preparing this course and delivering it was validated by the students' success and the students' motivation to attend similar courses in the future. However, maintaining overall design of the course will remain a challenge and require the oversight of the university administrators and educators to ensure the course's long-term success.

5.2 Research Question 2: What are the gains that might the participants of this course get?

At the Faculty level, Sabratha Faculty of Engineering benefits from this trail of service learning course in that it enriches the learning experience of the students who participated in this study. Furthermore, the outcomes of this trial help to identify new areas of research and extend the faculty resources and engagement into the community.

The following are the outcomes of the trial of implementing service learning at Sabratha Faculty of Engineering based on the students' reflection writing and focus group discussion:

1. Academic outcomes: The students felt that the tasks helped them put their learning into practice and gave them a real opportunity to apply what they learned. In addition, participating in this course enhanced their critical thinking skills and research skills. Student 17 wrote:

"This task helped me finally see the advantage of the information that I had from lectures. Rather than passing the exams, I realized that I can use them to help others. That gives me good feeling."

2. Personal outcomes: The students mentioned that they had gained self-confidence and communication skills through the course. Nine students wrote that they

learned something new about their abilities. Thus, the personal outcomes were strong, with the majority of the students seeing a change in themselves, ranging from simply having fun to discovering their abilities about what they can do. One student said:

"I used to be very shy and nervous when I have to speak in front of people, now I'm more confident speaker in front of large number of people. These tasks had their both sides, we learned to manage time more, work in groups, and be more responsible, even when we had the pressure of college studies, exams and other responsibilities."

In sum, this experience may have helped the students to gain a greater appreciation of their own self-worth as members of society. Participants developed a stronger civic commitment, and a greater sense of responsibility for others and the Libyan society itself. During focus-group interviews, participants spoke of people in need, and their role in helping to address these issues. Student 11 wrote:

"This competition experience helped us grow and identify our strengths and ability to achieve anything when pushed."

3. Social outcomes: students mentioned that they gained social skills and good experience to deal with others. 10 students mentioned that they are motivated to do volunteer work in the future. In terms of social outcomes, six students reported making new friends in this competition, 12 learned how to work in groups, 13 learned to work under pressure and time management. Thus, the social outcomes were strongest on the interpersonal level as students learned to work with others more effectively. Student 1 respectively student 8 wrote:

"We came out together as united group. We all pushed each other, motivated one another to succeed. We have learned a lot from this competition."

"Now we will apply the skills to be better students. we will create groups in our departments to make them better and encourage other students to take part in service learning."

4. Overall Evaluation. For Libyan youth, feeling empowered is important to maintain their civic engagement and might play a key role in the development of forming their identity and self-esteem. In addition, the experience of success might

dispose students to act positively towards learning and seek similar experiences in the future.

In fact, the main question from the audience in the presentations day was about the benefits that the students gain from participating in this course. The three groups answered that after realizing the impacts of their projects, they are further convinced that 'yes they can make a difference'

After the final presentations, the students expressed satisfaction with the course and pride in their work. They impressed their teachers. One student (S8) wrote:

"I'm proud of myself and my group that we achieved such a remarkable success. This competition exceeded my expectations and I am so happy that I participated in it."

Through their participation in the competition, students reported that they had learned new content and practical skills, such as leadership, planning, budgeting, research methods, teamwork, and communication. Student 16 wrote:

"…the second task helped us the six of us to be more collective and professional in handling our time and effort. It helped us understand responsibility and time management."

5.3 Difficulties encountered

The main challenge that I faced in working with the engineering students who participated in this study is that they were not familiar with group work. At the beginning, although clear roles for group members were assigned, some students dominated the work, while others did little work. I remedied this problem by providing cognitive modeling and illustrating effective strategies and procedures for task completion.

Another difficulty concerned the fact that some students seemed to be less interested by the end of the course because of their busy schedule as we finished one day before the final exams. Finally, some students had difficulty in accepting my role as a facilitator, and not as a source of knowledge and provider of ideas. At the beginning of project work some students felt uncomfortable with being given choices (e.g. project selection, team division of roles), and were thus apprehensive about project work. However, most of them soon realized that I was there to support and assist them.

However, with regard to students' opinions, when asked about which task or criteria of evaluation would choose to change, most of the students chose 'the time

available for each task', four students chose 'Presenting their projects in front of the audience, and one chose 'the group members'. Student 3 said:

"…at the beginning of the competition, we were quite unorganized and almost clueless, as the six of us have never participated in activities like this during our college semesters."

This result shows the other side of the previous findings. Although the final presentations were highly enjoyable, the process of forming groups, working together and developing a final presentation might be challenging for the Libyan college students. This confirms that students need training to learn skills such as group work and that student-centered approach should be recommended.

6. Conclusions and Recommendations

The Libyan educational system is ripe for reform, and service-learning is well positioned to be part of this process. This study fills a gap in the literature by investigating the gains of implementing service-learning in the Libyan higher education context as an effective pedagogy for engaging students in community action. Indeed, this pedagogy may be even more successful in developing countries such as Libya where young people are frequently ignored in colleges and in the society. Service learning increases the college students' awareness of the current issues and challenges in the Libyan community and engages them in active learning. In addition, it enhances their critical thinking and improves interpersonal and communication skills and civic engagement. Finally, service-learning offers teachers and students an ideal opportunity to take more ownership of their teaching and learning and integrate it in the society while meeting their own goals for academic, personal, social, and civic growth.

The program design will be shared within Libyan universities through workshops and presentations, with the hope that service-learning can make a positive impact on the educational system by encouraging students to be more connected to their communities.

Based on the findings of this research, I can suggest the following:

- University teachers should be supported with regular in-service professional development opportunities (i.e., workshops, conferences, using constructivist training models) in order to help these teachers; change their perceptions of the way they should teach.

- These in-service programs will also help the teachers, especially those who have no ideas about service learning, to adjust their own teaching methods and attitudes towards the significance of service learning.

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