



MULTIDISCIPLINARY PROJECTS SUPPORTED BY MODERN EDUCATIONAL TECHNIQUES: THE CASE OF “UOB RECYCLES”

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In the last two decades Multidisciplinary Projects at University level have become an integral part of education across various programmes of study. Their impact on students' educational development has proven to be projecting properly on the job market. Our work will highlight the experience of deploying such projects at the University of Balamand in Lebanon. It examines how such projects may be structured, managed and directed in a way to attract faculty members and students from various disciplines. The work details the operational steps followed by the Office of Student Affairs in partnership with the GIS Center in order to manage processes carried by various departments at the University all converging toward a common objective. More specifically, the work will present the “UOB Recycles” projects, a project aimed at spreading environmental awareness in the University and its surroundings. It will detail the way it was designed and carried to attract students, staff and faculty members from various departments (such as Engineering, Education, Mass Communication, Physical Education, and English). Additionally, Modern Educational methodologies such as Project Based Learning, Mentorship and Service Learning will be focused on as strong means to serve multidisciplinary projects. Also in this work is an analysis of the challenges and difficulties encountered during the implementation of the project and ways considered to overcome them.

Keywords: Project based learning, Recycling, Service learning, Multidisciplinary projects, Mentorship.

Introduction

Ever since the model of a Modern University has been adopted (1980) a new era in University education has emerged. The roles of Universities and academics have expanded in all direction. New roles towards society and students have been assumed and new objectives in research and teaching have been developed and adopted. Universities nowadays aim at preparing well rounded individuals. It became vital to develop new skills beyond academic achievements in order to help succeed in a highly competitive global job market. From that perspective, and during the last two decades, more efforts have been directed towards developing problem solving techniques in order to enhance critical thinking among youth. Thus, we have been experiencing a move towards a multidisciplinary integrated learning in all levels of education.

Literature Review

Multidisciplinary Projects

A multidisciplinary approach to problem solving involves drawing appropriately from multiple disciplines to redefine problems outside of normal boundaries and reach solutions based on a new understanding of complex situations. It is an approach guided by holism rather than reductionism which has been classified as being revolutionary by skill-centered specialists. Recently it has become of interest to many government agencies and professional bodies who recognize the advantages of systems thinking for complex problem solving and their importance when it comes to a real life conflict.[14]

Modern Educational Methodologies

Modern Educational Methodologies (such as *Service Learning*, *Mentorship*, and *Project Based Learning*) were developed during the last two decades in order to complement classical learning. Those are seen as effective tools to provide students with a monitored exposure to real world problems which have always captured students' interest and provoked serious thinking. It is well agreed that such an exposure helps them develop thinking and collaboration skills needed in the workplace [1].

Project Based Learning (PjBL) is organized around an open-ended *Driving Question* or *Challenge* allowing some degree of student voice and choice; it incorporates feedback and revision, and results in a publicly presented product or performance. It is best defined as an educational methodology relating real life issues to classroom projects. In Project Based Learning scholars play the role of facilitator, working with students to frame worthwhile questions, structuring meaningful tasks, coaching both knowledge development and social skills. Students on the other hand learn to ask questions, build knowledge, and determine a real-world solution to the issue/question presented. They engage in design, problem solving, decision making, and investigative activities. The student therefore develops communication skills, research methods and learns to take ownership of his success [1].

Mentorship is a process of informal transmission of knowledge and the support perceived by the recipient as relevant to work, career, professional development or academic knowhow. It refers to a personal developmental relationship which entails an informal communication, usually face-to-face and during a sustained period of time, between the mentor and the Mentee. It is an ongoing relationship of learning, dialog, and challenge [12].

Service Learning is another academic approach to integrating real life problems in the educational system. It relies on the clear identification and definition of the learning components and outcomes of a student undergoing a community service experience in the same manner community partners' requirements were defined [2]-[3]-[4]-[5]-[6]. It emphasizes three main objectives; experimental education, career development and community service. Learners throughout this process learn to deploy their academic skills to meet community needs, develop practical skills and build leadership capabilities [7]. Same as in PjBL continuous monitoring of student progress must be maintained in order to ensure that objectives are met to standards acceptable by both the institution and the community partners [6].

In all above mentioned methodologies, students and academics are confronted with very specialized and challenging learning opportunities in which practical solutions are to be found for very specific problems [6], therefore adding a new component to the traditional teaching/learning processes.

The Educational System in Lebanon

In 2002 the Ministry of Education and Higher Education in Lebanon adopted a change of curriculum across the schooling system nationwide. The new curriculum emphasized the shift from *Teaching to Learning*, from *Inputs to Outcomes*, from *Rote Learning to Integrated Learning*. The main aim was to adopt an interdisciplinary approach to learning and problem solving throughout the Lebanese curriculum [15].

The Community Service Program at UOB (SEED Office)

Service Education, Experience through Doing (SEED) is the community service program at UOB. It is based on the philosophy of Service Learning, seeking to meet the real needs of the nation by building partnerships between the University and the community [10]. The program offers one credit courses free of charge to students across University that may accumulate towards their respective graduation requirements.

The GIS Center at UOB

The University of Balamand, established its GIS Center (GISC) in 1999 within the faculty of Engineering to serve faculty, students, and staff by coordinating the acquisition, instruction, deployment, and development of Geographic Information Technologies on UOB campus. The particularity of this center is in its belonging to an educational institution; the fact that shaped its mission towards advancing knowledge in GIS technologies through real projects using modern educational techniques.

The center is student based; It aims at engaging youth in Community Based Projects using experimental practices hence promoting learning through doing. Its primary objective is to prepare skilled GIS individuals who can participate in building, using and maintaining GIS applications.

Objective

This work presents the details of a multidisciplinary project at the University of Balamand. The project, entitled "UOB Recycles" addresses one of the most serious problems at national level: The emerging pollution situation in Lebanon. The paper examines how such projects may be structured, managed, and directed to attract faculty members and students from various disciplines emphasizing an academic role that may be assumed by the Office of Students Affairs (OSA) at the University. It aims at presenting an innovative pedagogical educational model in implementing multidisciplinary project at University level which illustrates an alteration from the classical instructional model to a student based active learning process.

Briefing and Project Outline

Recycling by definition is the act of processing used or abandoned materials for use in creating new products [8]. Essentially, it is an attitude, a behavior that all citizens should develop and adopt as waste management is primarily a personal initiative in the absence of a global policy at the national level. While this awareness behavior in Lebanon is on the rise, more efforts are yet to be expended before it becomes effective. Educational institutions, NGOs and Municipalities may then provide proper framework for such an operation and hence play a major role in spreading this culture.

"UOB recycles" is a project set to meet that philosophy. It is managed by the *Office of Student Affairs (OSA)*, a University unit lead by the Dean of Students. OSA is mainly concerned with developing programs and activities that are intended to improve the quality of life at the University and provide proper ground for the development of a well rounded student [9]. The project started as an awareness campaign initiated by the Nature Club at UOB. It involved awareness campaigns, publicity planning, data collection, data analysis, auditing, management planning, self-assessment as well as reporting.

The project was designed to be implemented in three stages over a period of 10 years.

Stage One: Internal Implementation

At that stage the objective was to spread awareness within the University. It was considered as a pilot project in which obstacles could be identified and addressed. The duration of that stage was one academic year 2008-2009.

Stage Two: Involvement of Schools in the Region

This stage aimed at building partnership with a number of schools in the region. The objective was to expand the experience and hence the project to the academic entourage. The duration of that stage is designed to be six years starting 2009.

Stage Three: Involvement of the Community at Large

In its final stage the project aims at involving the largest number of community partners from various sectors (companies, banks, supermarkets, restaurants....) hence projecting on community as a whole. The duration of that stage is designed to be three years starting 2015.

In all its stages the project depended mainly on students (aged 12-22). It is believed that they are potential managers, powerful evaluators, and would be the most influential messengers in the society [13].

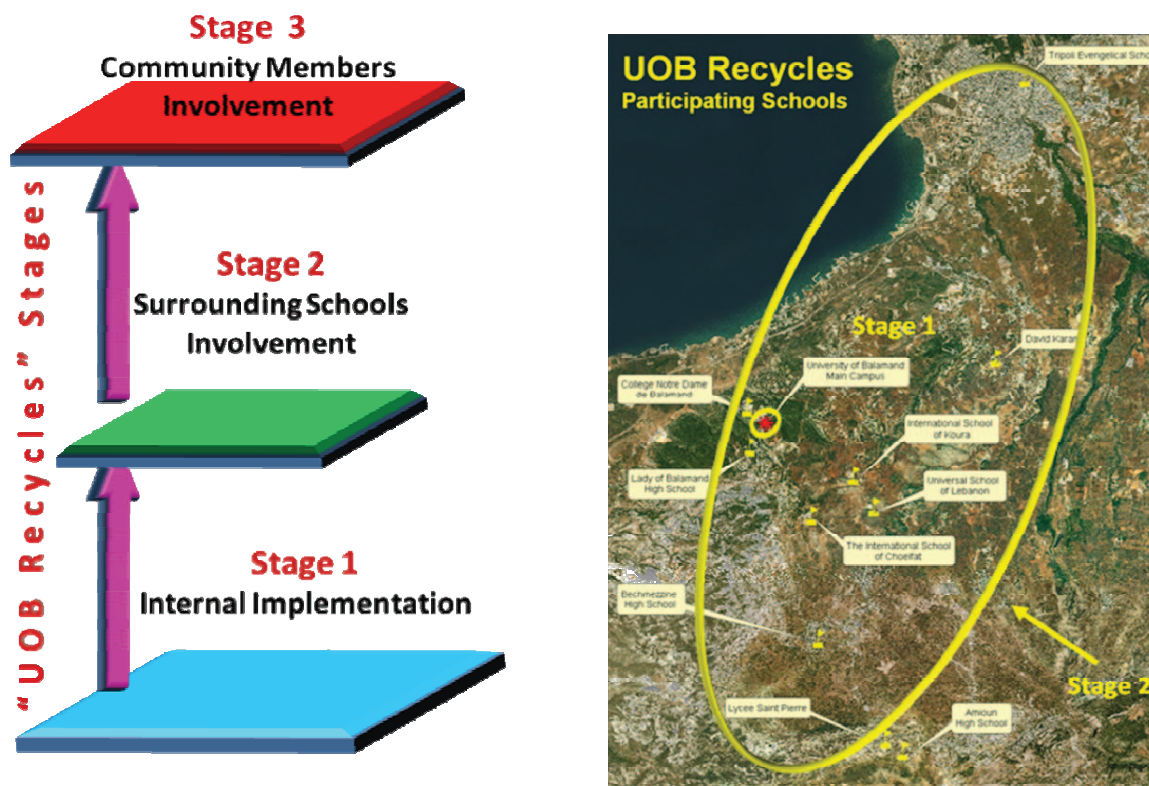


Figure 1. "UOB Recycles" Project Stages.

The Partnership

The OSA sensed in this initiative a proper ground to initiate a pioneering multidisciplinary project across the University. Accordingly, a partnership was established between the OSA, the SEED office and the GIS Center giving the project a particular characteristic, merging academia and civic engagement. The three units, each having its own objectives, benefited from this partnership and participated jointly in addressing a national problem to which pragmatic solutions were suggested thus fulfilling the mission of the University in serving its community. Within this structure the project succeeded in attracting faculty

members from various disciplines and grew to incorporate inputs from nearly all nine faculties at the University.

Three SEED courses were offered under the umbrella of “UOB recycles”; students from various disciplines (Engineering, Education, Mass Communication, Physical Education, English and many others...) joined the project and created a pooling of personnel who supported the project over the last four years.

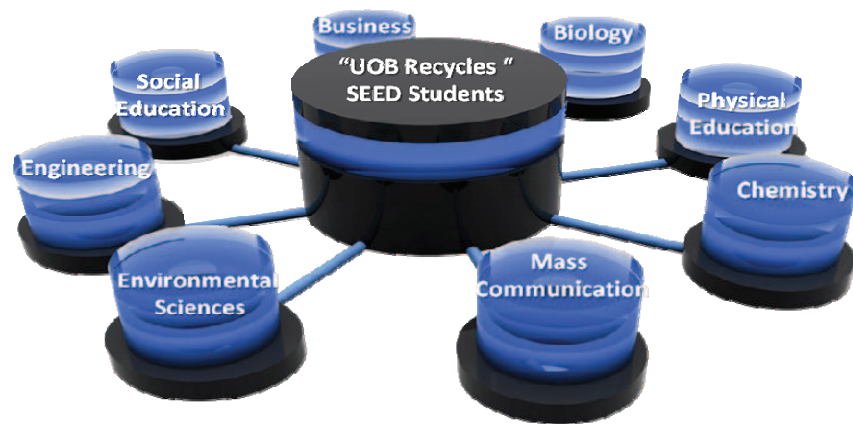


Figure 2. “UOB Recycles” SEED Students Pooling.

SEED1: UOB Recycles- Awareness

The first SEED course is offered during the fall semester; it aims at preparing events and planning the yearly campaign in order to spread awareness of the 3 R Culture on campus and its surrounding. Students who joined this course formed cells with specific tasks in order to plan organize and execute a full awareness campaign.



Figure 3. SEED 1 Course Main Tasks.



Figure 4. SEED1 Course Sample Tasks.

SEED2: UOB Recycles- Mentorship

The second SEED course is offered during the spring semester it is designed to support stage two of the project in which a partnership was built with a number of schools in the region. The aim was to build clubs in each partner school to be the "UOB recycles" representative in their own community. The responsibility of the students who joined this course was to support school students in the preparation of an awareness campaign within their schools and local communities.



Figure 5. SEED2 Course Sample Work.

Mentorship was incorporated in this SEED Course as supportive methodology besides Service Learning. Hence University students acted as mentors for the younger school students and were responsible to share their experience, guide and provide



Figure 6. SEED 2 Students' Mentorship Tasks.

SEED3: UOB Recycles-GIS

In order to provide an effective management framework for operation, it was decided to harness the powers of modern Geographical Information Systems (GIS). This SEED course is also offered during the spring semester and parallel to a well structured course offered to engineering students at the GIS center. Students who joined this course were responsible to pass their GIS know how to school students and to supervise the production of digital maps in partnership with a number of local schools. The maps were powerful tools in visualization and data analysis. They illustrated all recycling activities geographically and resulted in efficient action plans targeting new locations and attracting new community partners to the project.

Project based learning in addition to Service learning was adopted in this SEED course hence providing the students with an opportunity to practice the skills acquired in the classroom and implement them in a real-life project.



Figure 7. Sample GIS Maps.

Results

The impact of that educational experience was quite impressive on both groups of students. Along with the positive educational results noted, students developed leadership qualities, team work spirit, conflict resolution skills, planning and auditing methodologies, communication and presentation skills. They succeeded in spreading environmental awareness within their community and developed spatial awareness, and a sense of appreciation to the powers of GIS technologies especially when directed to answer community related problems.

The following diagram shows the impact of such learning experience on the students on three levels: Academic, personal and Social aspects.

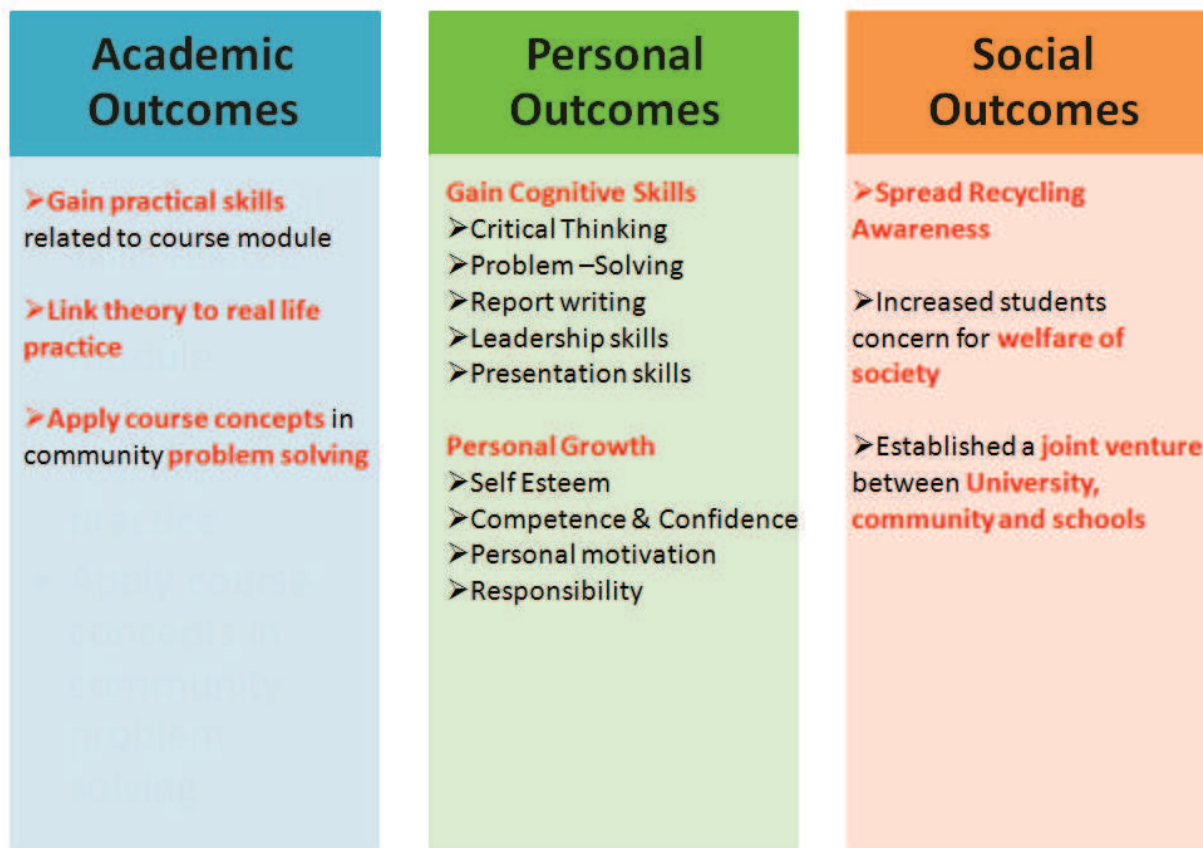


Figure 8. Diagram assessing the outcomes of the “UOB Recycles” project.

Conclusion

The paper addressed modern educational techniques as supportive tools to multidisciplinary projects in Education at University level. From the work presented the following conclusions could be drawn:

- A Multidisciplinary approach in academia provides a holistic perspective to the learning process.
- Students who participate in multidisciplinary project develop an understanding and an appreciation for the Entity- Relation (ER) Model.
- Students engaged in community service connect more to what they are learning.
- Service Learning and Project Based Learning provide an effective mechanism for extending the learning experience beyond classroom.

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