

A Methodology for Implementation of Service Learning in Higher Education Institution: A case study from Faculty of Computer Science and Information Technology, UNIMAS

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Abstract—Service learning is a teaching and learning approach that includes an aspect of community service within an academic course with instruction and reflection, with the objective to enrich students' learning experience. This is in line with the aspiration of the Malaysian government to produce well-rounded and holistic graduates and included in Shift 1 of the Malaysia Education Blueprint 2015-2025 (Higher Education). There are various challenges in the implementation of a service learning program, with the involvement of many stakeholders and local culture and nature of the specific community. Therefore, this paper proposed a methodology for the implementation of a service learning program, within an academic course, taking into consideration of various stakeholders and the needs of the community. This paper also presented the case study based on the application of the methodology at the faculty. Having a sound methodology has minimised the issues during the implementation, and could be applied by other interested parties.

Index Terms—Service Learning; HIEPs; Experiential Education; Malaysia Education Blueprint;

I. INTRODUCTION

Service learning has become an important component in higher learning institutions. In the United States, service learning has been explored and practised in both schools and higher learning institutions, not only locally but with active global participation from other countries as collaborators [1].

In Malaysia, service learning is still in its infancy stage [2] within institutions of higher learning. Service learning has been identified as one of the key strategies in Malaysia Education Blueprint 2015-2025 by Malaysia Education Ministry [3]. The Ministry of Higher Education has developed a more holistic and integrated curricular through the application of experiential learning and service learning. Service learning is one of the component in the High Impact Educational Practices (HIEPs) in the Malaysia Education Blueprint requirements, which is stated under Shift 1 as follows:

“Shift Number One: holistic, entrepreneurial and balanced graduates where every graduate will have the relevant disciplinary knowledge, skills, morality as well as appropriate behaviours, mindsets, cultural and civilisation literacy to advance them to a high level of personal well-being” [3].

To date, there are many existing service learning frameworks and models developed by higher institutions, colleges, schools and government agencies for the implementation of service learning in their institutions. However, each institution has their mission and vision for achieving their student learning and adhering requirements by national education policy.

An objective of this paper is to propose a methodology of a service learning program implementation by addressing the issues in Sarawak and Malaysia context. Thus, a research question has been formulated to guide a direction of the research, *“What is the best methodology to implement a service learning in Higher Education Institution?”*

Section II surveys the works related to the current service learning frameworks at local and international levels. Our proposed methodology for implementing a service learning program and its three main phases are presented in section III. Section IV describes a case study of the service learning implementation based on the proposed methodology. Four main projects under the case study also been discussed in this section. Lastly, section V concludes the work that has been done so far.

II. BACKGROUND

A. Service Learning Definitions

There are various definitions of service learning term; Service learning is a form of experiential education in higher institutions. Service learning is different from other experiential education like internships, community service, field education, volunteer or clinical work. The service learning provides a mutually beneficial experience for both the student and organisation and service learning focuses equally on both the service contributed by the students and the service learning that is fostered back in the classroom[4]. As defined by Purdue University, service learning is a teaching and learning process of engaging students with communities in service oriented activities with the aim of enriching the students' learning experience individually and academically. Students are expected to participate in organising service activity that meets identified community needs, use knowledge and skills directly related to a course discipline and reflect on the service activity [5].

Service learning has been identified as one of the key strategies in Malaysia Education Blueprint 2015-2025. The

Malaysia Education Ministry has defined service Learning is a “form of experiential learning which occurs through a cycle of action and reflection as students what they are learning to address real community needs” [3].

B. Service Learning Frameworks

A service learning framework for dental education developed by [6], offers a structure of three areas namely the planning, implementation, and evaluation of service learning in the dental curriculum. The [6] framework comprised of ten components including an academic link, sustained community partnerships, service learning objectives, broad preparation, sustained service reciprocal learning, guided reflection, community engagement, evaluation and improvement and community engaged scholarship.

A theoretical and practical framework for service learning in marketing has been developed by [7] to guide for planning, implementing and evaluating a service learning course in marketing through Kolb’s Experiential Learning Cycle Model. In education domain, teachers can adopt an inclusive ethical framework for beginner teachers with a focus on broadening students’ experience and understanding about the backgrounds and values of people in society [8]. To ensure all stakeholders involvement, [9] proposed Comprehensive Framework for Community Service Learning based on three key stakeholders or constituents including institutions, students and communities in Canada [9]. The Comprehensive Framework by [9] also considers the achievement of social responsibility, intellectual growth, leadership development, appreciating diversity, career and educational goals, self-awareness and clarified values.

As part of achieving student program outcome in higher institution, Universiti Teknologi Malaysia developed a Service Learning Model with emphasis on four elements; infrastructure, schedule, requirements and program outcome [10]. The program outcomes for students focus on higher level thinking skills and basic skills. Since building the partnership between university and community has been a challenging task for universities, a readiness framework was developed by researchers to determine whether universities fully prepared in the community-university partnership [11]. In health and medical areas, service learning was widely implemented within higher institutions. For example, in a nursing program, service learning framework [12] was developed to ensure a collaborative process of service learning project towards successful measurement of the benefits of undergraduate nursing students' service-learning projects on community agencies and the people they serve through a collaborative community-academic partnership [13].

III. PROPOSED SERVICE LEARNING METHODOLOGY

Theoretically, there are three types of government structure in the Malaysian Federation system, firstly, Federal, follows by State and lastly, Local Governments. Then only, executive and legislative power between Sarawak and the Federal of Governments are distributed. According to the system, Federal Government such as Ministry of Education Malaysia is responsible for all aspects of the education system in Sarawak including pre-tertiary, compulsory and vocational educations. Apart from that, Sarawak State Government will appoint Local Government Representatives. The Local Government Representatives are including Resident, District

Officer, Administrative Officer, Headman (Penghulu/Ketua Kampung), which responsible for divisions, districts, sub-districts and villages. The inadequacy of the current service learning methodology in addressing the issues in Sarawak and Malaysia context has led to propose a new methodology addresses university requirements and community engagement issues at various groups/levels in Sarawak. Since Sarawak is part of Federation of Malaysia since 1963, thus, the community engagement design is based on the current government structure.

The proposed methodology in this paper consist of three phases of service learning implementation within the community, namely, *Phase 1: Service Learning Planning, Analysis and Design*, *Phase 2: Service Learning Delivery and Phase 3: Service Learning Evaluation, Reflection and Monitoring*. See Figure 1. There are altogether six components within the three phases. The components are described here and presented as a case study in Section IV.

A. Phase 1: Service Learning Planning, Analysis and Design

The Service Learning Planning, Analysis and Design phase involves identifying and analysing problems or opportunities and incorporates the service learning and information systems development processes and activities. There are three steps in Phase 1.

a. Step 1: Form Faculty Service Learning Committee

Without the dedicated support of faculty involvement, incorporating service learning into the curriculum will not thrive [14]. The role of Faculty Service Learning Committee is to make recommendations to the Faculty regarding service learning requirements regarding courses, student and community. The committee also serves as a liaison between the Faculty and the community. The Comprehensive Action Plan for Service Learning model by Robert suggests during the planning stage; the faculty needs to identify interested and experienced faculty in service learning planning group and including forming a faculty committee [15]. Additionally, administration involvement and support is crucial in developing and sustaining service learning programs [14].

b. Step 2: Conduct Feasibility Studies

In service learning, conducting feasibility study is essential before service learning is implemented in the community. There are five types of feasibility studies that need to be conducted in service learning implementation; (1) Course development, (2) Service Learning Projects, (3) Operational, (4) Financial and (5) Technical.

Each of these types will be briefly described as follows:

1. Course Development

Faculty needs to study how to integrate the service learning within the curriculum, based on the requirements, needs and direction of the faculty programme. [6] stated that a service learning program must be an academic activity. According to [6] there are three types of activity on how service learning can be implemented, namely, course based, competency based, and structured volunteer experience. There are three strategies how to incorporate service learning into the curriculum, i) a compulsory or optional course component, ii) offered as an additional credit attached to an existing three or four credit course and iii) integrated into program requirements or linked courses [16]. Apart from this,

reshaping course content and learning objectives should be studied as well. Service learning objectives must consider both perspectives, student and community requirements. Explicit and mutual agreement on service learning objectives also must be achieved between faculty and community. The faculty also need to study the requirements of course instructions and its activities, learning resources, course component evaluation.

SERVICE LEARNING METHODOLOGY

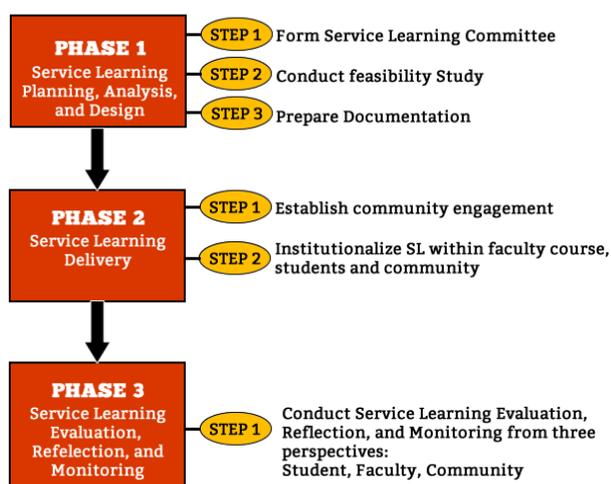


Figure 1: A methodology for Service Learning implementation

2. Service Learning Projects

There are two types of service learning projects, which are direct and indirect services [17]. According to [17], direct service provides service directly to individuals in the community, for example, face to face and person to person. Indirect service involves a project with impact on a community; however, it does not involve working directly with individuals the community serves. The nature of project should reflect the contents of the syllabus, community needs, reflection on service learning activities [15]. Also, the learner should have prior knowledge and appropriate skills before going to the community, for example, computer science students should equip themselves with basic software development, database design and development and website design and development. Service learning project design can be done either individual or group based [17].

3. Operational

An operational feasibility study can be conducted from three different perspectives, faculty/university, student and community. The operational feasibility study should consider the Institutional commitment [15] in terms of resources, administrative commitments, student support services, faculty involvement in curricular changes and service learning office. It is important in planning a service learning to know the nature of student involvement in service activities, the number of students, student attitudes toward service and service learning and also degree and credit requirements. From the community perspective, the operational feasibility study should also consider surveying the existing community-university partnership, identify appropriate community representatives.

4. Financial

A financial requirement is normally determined by size and nature of the project, a size of class and scale of service learning implementation. Budget plan should be conducted to ensure service learning project can be implemented effectively and efficiently within the community. The financial feasibility study should consider the cost involved per location in a community including travelling and transportation cost, accommodation, food allowance, materials, printing, rent/fees, administrative works and related costs. Financial support requires commitment from institution [14], funders from private or government agencies, businesses, political group, or individuals.

5. Technical

Technical relates to infrastructure [16] and IT requirements (software and hardware) of student, faculty and community. The technical feasibility study needs to identify the number of students the infrastructure can support within the community. The technical feasibility study should also identify the requirements of IT such as computer, internet, projector, electricity and software. Apart from this, the study should consider types of communication tools used between service learning supervisor-student, instructor-student and community supervisor-students.

B. Phase 2: Service Learning Delivery

After all components in Phase 1 have been considered, analysed and decided at faculty level, now Phase 2 is focusing more on the service learning implementation of faculty course within the community. It has two steps, namely, to establish community engagement and to institutionalize service learning within faculty course, students and community.

a. Step 1: Establish Community Engagement

Building partnership between university-community is a crucial process for a successful community engagement. A literature describes the challenges of achieving successful partnership from different aspects including time, a commitment of resources, curriculum [18][19][20][11]. Community engagement is described as the collaboration “between higher education and their larger communities (local, regional/state, national, global) for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity” [21]. [11] has proposed a practical framework for considering service learning readiness in community-university partnerships. They argue that university cannot be assumed to be ready and able to engage in meaningful community partnership. Therefore, a well-planned community engagement is essential to ensure that community partnerships are not only willing to participate but also able to engage in effective community-university collaborations. Furthermore, attention must be given to address the community needs in their daily activities. During the engagement, both community and university must understand and mutually agreed on the service learning benefits for each party. For the university, the integration of service learning in faculty program enhance student’s course content understanding, develop civic responsibility and increase practical experience [22]. As for the community, the service learning provides the community opportunities to access to faculty experts and contribute to the visibility of the community.

Importantly, preliminary community engagement is central to community engagement. It may adopt a mix of strategies, a combination of top-down approach and bottom-up approach [23]. The higher authorities determine the top-down approach (e.g., Government). While, the community determines the bottom-up approach.

b. Step 2: Institutionalise service learning within faculty course, students and community

After identifying the degree requirement (e.g., Compulsory or optional for BSc, MSc) or a number of credit (e.g., 3 credit or 4 credit) that need to be taken for service learning, the faculty should cultivate service learning as part of student culture. Institutionalisation of service learning for the student can be reflected from various channels such as student enrollment in service learning classes, student assessment related to service learning activities, student recruitment to the campus and distribute service learning information (e.g., Faculty website, newsletter, brochure, leaflet) [15].

C. Phase 3: Service Learning Evaluation, Reflection and Monitoring

Evaluation [15], reflection [17][16] and monitoring can be done from three perspectives, faculty perspective, student perspective and community perspective. According to [15], Faculty and student can be evaluated using course outcome such as student satisfaction and student learning outcome, whilst, the community can be assessed the impact of service learning activities to community needs. Reflection is important to enrich the learning experience, empower civic responsibility and strengthen community [14].

IV. SERVICE LEARNING IMPLEMENTATION CASE STUDY

This section will highlight and discuss the implementation of the service learning program at the Faculty of Computer Science & IT, Universiti Malaysia Sarawak (UNIMAS). The proposed methodology in this paper offers three phases of service learning implementation within the community: Phase 1 Service Learning Planning, Design and Analysis, Phase 2 Service Learning Delivery and Phase 3 Service Learning Evaluation, Reflection and Monitoring. The proposed methodology comprised 6 components within the three phases. The components are described here and are illustrated in a case study in section 4.0. See Figure 1.

In line with Malaysia Education Blueprint 2015-2025 [3], by Ministry of Higher Education, Faculty of Computer Science and Information Technology, UNIMAS has taken a bold step to integrate Service Learning components within one Faculty Core Course Programme, namely Technopreneurship and Product Development (TMC3034). The course is suitable and relevant to the community because the learning objectives emphasise how students can propose technological solutions for technopreneurship opportunities based on the real needs of the community. The course was offered in the first semester of 2016/2017 academic session, with 378 students enrolled and managed by 5 lecturers, 10 Faculty Supervisors and 41 Community Supervisors. Two divisions, Kuching and Kota Samarahan have been selected to be the project sites for Service Learning implementation. There are two reasons why Kuching and Kota Samarahan divisions were selected, first is minimised logistic requirements due to a large number of student and second is to give priority to community living near UNIMAS.

A. Phase 1: Service Learning Planning, Design and Analysis

a. Formation of Committee

The management of Faculty of Computer Science and Information Technology has appointed Faculty Service Learning Committee in March 2016 comprising Advisors, Coordinators and Members as listed in Table 1.

Table 1
Faculty Service Learning Committee structure of Faculty of Computer Science and Information Technology, UNIMAS

FCSIT Service Learning Committee	
	Dean of FCSIT
Advisor(s)	Deputy Dean Undergraduate Study and Student Development of FCSIT
Coordinator(s)	Coordinator 1 (Academician) Coordinator 2 (Academician)
Members	7 Committee Members (Academician)

The Committee is responsible to design and implement the service learning program as part of undergraduate program. Besides, the committee also require to conduct engagement and collaboration with the community. To achieve the Service Learning objective at the Faculty, tasks were delegated to smaller groups; Coordination and Planning, Pre-Engagement Group at School, Pre-Engagement Group at Village, Course Preparation, Sponsorship and Finance, Launching and Visibility, Intellectual Property, Commercialization and Publication.

b. Course Preparation

Course preparation is also another crucial process in Service Learning implementation in FCSIT. To implement the SL program as part of the undergraduate curriculum, the faculty have decided to embed the SL component into one of the core course for the faculty which is compulsory to all students in the different undergraduate program at the faculty. The management of Faculty has assigned 5 lecturers to teach this course in last semester. The lecturers worked closely with Faculty Service Learning Committee to ensure the implementation is efficient and effective. Firstly, the meeting was conducted between Faculty Academic Committee, Faculty Service Learning Committee and Lecturers to discuss and get an agreement regarding Service Learning requirements. Lecturers involved redesigned the course and underwent Continuous Quality Improvement (CQI) to ensure the course outline fulfils both requirements from a Student and Community perspectives. After Senate approval, the course was ready to be implemented in September 2016, Semester 1 2016/2017.

c. Service Learning Projects Implementation

With the emerging of technology and expose students to ICT related real world problems, the Faculty SL committee agreed to set two types of project based on the ICT field to the students and community. The type of projects is either a system development type or ICT training. Eventually, during the implementation of the service learning program, there were 41 focused projects based on the community's requirements. In this paper, five selected projects will be discussed in the next sub-sections.

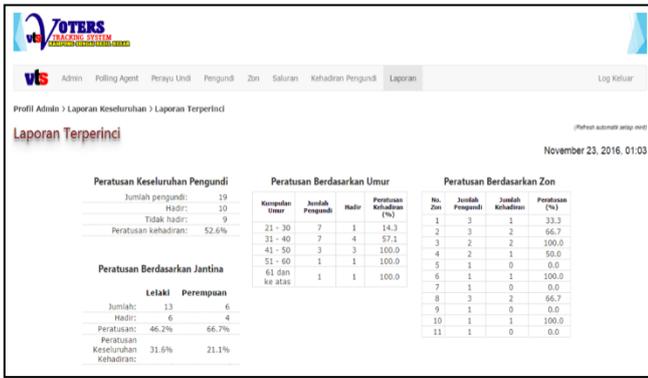


Figure 2: An interface of Laporan Terperinci in VTS

d. Project 1 - Voter Tracking System

Voter Tracking System (VTS) is a web-based system to assist users at the polling station during the election day. The VTS was proposed by a community representative of Kampung Sungai Bedil Besar, based on their challenges during the election day. The most common challenges facing by the community are the inefficiency of a manual electoral process when managing the voter’s attendance, and potential of human error occurs when manually calculating the percentage of voter’s attendance.

Thus, the objectives in developing the VTS are to monitor and keep track the voter’s attendance in an efficient and effective manner and reduce the workload of the polling agents and workers (*perayu undi*) by transforming the conventional workflow into a computerised system. Four types of VTS users are workers (*perayu undi*), polling agents, admin and super admin. Besides managing the voter’s attendance and details (with an edit, delete and update functions), the VTS also be able to visualise percentage of the voter’s attendance, the voter’s gender and age, and located zones of the voters in a graphical and table forms. See Figure 2.

With VTS, the community of Kampung Sungai Bedil Besar will be able to maintain their status as the highest voters elected during the election day in Sarawak. Moreover, a workflow of tracking the voter’s attendance could be done in a systematic and efficient means.

e. Project 2 - Village Map Location Database System

In line with the current technology of Google maps, the community of Kampung Goebilt has requested a system that is able to display a house owner’s information as well as the occupants when the selected house in the map is being selected on the system. The idea was proposed due to a difficulty in finding a location of the house owner’s information with the conventional process. The mentioned process required the headman to manually visualise the location of each house in the village. Nevertheless, this would be a challenge for the headman to decide relevant to the location of each house.

Hence, a village map location database system has been proposed to fulfil the community requirements. The developed system be able to: a) create and store house as well as household information of Kampung Goebilt, b) manage the household information by allowing the user to edit and update the information, c) search for the household information and, d) view Kampung Goebilt’s map and display the household information with the mouse over function. The online map will provide visual location of each house in Kampung

Goebilt. Indirectly, the system will assist and ease the community especially the headman and village committee, to make a decision systematically based on the provided information.

f. Project 3 - Community Profiling Database System

A community profile provides an overview of the community needs, for instance, political and economic structures, basic household and community facilities, and social organisation [24]. From the profile, a headman and district council can understand the context of a community so that specific areas, issues, and linkages can be further identified and analysed. Hence, there is a need to have a community profiling for each village in a database system.

In line with that, Kampung Rampangi Phase I and II have started their community profiling a few years ago, by using a conventional approach, which is paper-based. Drawbacks of the approach were paper wasted as the number of population keep increasing over the years, difficulty to update new information in the paper-based record and improper data management when manually searching for the individual villager.



Figure 3: Main interface of web portal of Kampung Rampangi Phase I & II

Due to this issue, the community proposed to transform the current approach of the community profiling into a computerised system, which is the form of a database system. The developed system will be able to manage community information by allowing the user to insert new records; update, delete and search the existing records; and generate a report according to the selected record, as the report need to be submitted to the District Office once a month. See Figure 3.

Furthermore, the system would benefit the management of the village in term of providing vital information for making evidence-based decisions to the headman and District Office in rendering services for the community as it changes over time. For instance, the profiling data may give a basic understanding of the community and the information on particular areas of interest.

g. Project 4 - Web Portal and Interactive Website

The terms website and web portal are two different entities. According to [25], a website is a unique location on the Internet and accessible via a web browser using a specific web address. While web portal is accesible via a web browser and specific web address, however, its content is login protected and user-specific. Nevertheless, both terms have the same goal which is to share information over the Internet. With these two different definitions, two examples of a success story from Kampung No 3, Kuching and Kampung

Pinggang Jaya, Kota Samarahan will be shared in this subsection.

Based on user requirements from the community of two villages; the SL groups developed a web portal of Dewan Undangan Negeri (DUN) N8 Satok for Kampung No 3 and an interactive website of Kampung Pinggang Jaya.

i. Web Portal of Dewan Undangan Negeri (DUN) N8 Satok

The objective of the web portal of DUN N8 Satok is to profile all data relevant to the 13 villages within DUN Satok under an administration of Sarawak Chief Minister, Datuk Amar Abang Abdul Rahman Zohari Tun Abang Haji Openg. The web portal provides information relating to these villages; Kampung Masjid (Seguling), Kampung Bintangor Kechil, Kampung Bintangor Besar, Kampung Bandarsah, Kampung No.3 & No.4, Kampung No.5 & Kampung No.6, Kampung Temedak (Muhibah), Kampung Muda Hashim, Kampung Kudei Lama, Kampung Kudei Baru Melayu, Kampung Kudei Baru Iban, Kampung Sungai Maong and Kampung Sagedup. Figure 4 shows the main page of the web portal for DUN N8 Satok.



Figure 4: Main interface of the web portal for DUN N8 Satok

The portal provides information relating to the history, demographic, facilities, activities, achievements, local leaders and organisational chart of Jawatankuasa Kemajuan Keselamatan Kampung (JKKK) as well as contact details, for each village under N8 Satok. Besides, the web portal allows only authenticated JKKK of each village to manage their profiling data by insert a new record, update and delete the current record, and search for any information in the portal. Significantly, profiling the history is a part of preserving the culture and heritage of the villages in DUN N8 Satok.

ii. Interactive Website of Kampung Pinggang Jaya

Gula apong (nipah palm sugar) is a granulated sugar made from sap of nipah palms. It has its aroma and lasting for a long period. [26] stated gula apong can be a source of alternative sweetener. Due to this, there is a high demand of the gula apong from global industries nowadays. Moreover, a group of enterprising farmers in Manilla is now engaged in producing a natural sweetener from nipah palm, knowing its demand for organic products and its healthy ingredients [27]. In fact, gula apong production is also a main economic activity in Kampung Pinggang Jaya. Various of local products made from gula apong are manufactured by the community such as nipah vinegar and traditional snacks. With the high demand from the local industries, the community started to participate actively in producing the gula apong. However, lack of IT literacy has limited them to market their product via online.

The SL students, therefore, has designed and developed an interactive website to assist the community in promoting and marketing their local product and specialities via online. Figure 5 depicts a main homepage of the interactive website. One of the main feature on the website is a video showing the *gula apong* manufacturing process with a purpose to share the information to the worldwide. Ultimately, it is hoped that the website could benefit the community in promoting and marketing their *gula apong* to the globe via online.



Figure 5: Main homepage of Kampung Pinggang Jaya website

h. Sponsorship and Budget

One of the main challenges for SL program implementation is the financial implication which requires a substantial amount of budget mainly for logistic purposes. The faculty has decided to implement Service Learning in big scale involving two divisions, Kuching and Kota Samarahan and covers 20 villages and 20 schools. There were 40 locations with 41 projects, and 378 students participated in this program. Managing 41 projects within the community was a challenge and requires an enormous amount of time, work and also cost to achieve the ultimate objective of service learning. Service Learning Budget Proposal was prepared by Faculty Service Learning Committee in terms of design, planning and costs involved for sponsorship application.

The sponsorship application was sent to the various group including Member of Parliament, Member of State Legislative Assembly, State Government, State Agencies, Private Organisations and Businesses. After presenting the Service Learning Budget proposal, we received five sponsorships from Chief Minister Office, Deputy Chief Minister Office, Member of Parliaments and Private Organization. The amount received by sponsors were used for field works, transportation, foods, materials printing, service learning launching, administrative and related works.

B. Phase 2: Service Learning Delivery

Preliminary engagement is a crucial process. Faculty Service Learning Committee of FCSIT was tasked to collaborate with various groups of people with different

background and culture. Every community has different ways of engagement protocols and procedures. To achieve the objective of preliminary engagement process, faculty adopted a mix strategy, a combination of top-down approach and bottom-up approach to gain access to the community in Kuching and Kota Samarahan. There are two types of community involved in this project, Village and School. These two types of community are selected to provide the greatest impact of the SL program in term of outcome.

a. Preliminary Engagement with Community: Village

To ensure effective community engagement, the SL team has designed and implemented the following four steps of Community-Faculty engagement as shown in Figure 6.

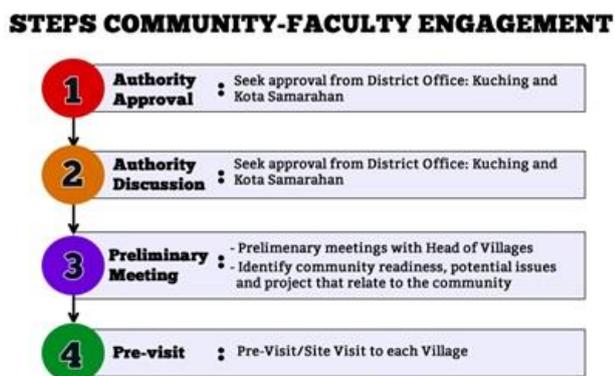


Figure 6: Four steps of Community-Faculty Engagement for Village Community

Firstly, faculty seeks approval from District office in Kuching and Kota Samarahan. Once faculty got the approval, it was followed by discussions with District Officers to seek their advices, recommendation of villages as well as concerns and issues in the villages. To achieve the objective of preliminary engagement process, faculty adopted a top-down approach (from step 1-2) to identify recommendations from higher authority, District Office on list of villages to the community in Kuching and Kota Samarahan.

Next, faculty held preliminary meetings with the Head of the selected villages. During the meetings, there were some questions were highlighted, for example, what SL is, how SL program benefits both parties, what are the IT projects that we can help in the community, what are their preferences of project that relate to their village and surrounding and many more. At this stage, a bottom-up approach was used to identify the needs from villages. As service learning is a win-win situation, faculty course contents requirements and learner’s knowledge and skills were matched to the list of service learning projects proposed by community.

Then, within two months after the preliminary meetings, faculty had a pre-visit, the site of the villages to see the distance and re-confirm on the selection of IT project of their choices.

b. Preliminary Engagement with Community: School

The first process of school selection was conducting a meeting with Education Department in Kuching. The Faculty Service Learning Committee has been informed in terms of the procedures and potential projects of collaboration. The Education Department suggested to meet up State Technology Education Bureau in Kota Samarahan. Top-down approach was conducted to identify the

recommendations of Education Department and State Technology Education Bureau.

After getting approval from Education Department and State Technology Education Bureau, meetings were held few times between Faculty Service Learning Committee and School Principal/Headmasters. At this level, faculty adopted bottom-up approach where School Principal and Headmasters discussed their potential projects and needs at School and whilst faculty presented the course contents and student’s knowledge and skills. Both reached explicit agreement and expectations in terms of deliverables by students to the community. Pre-visit at schools was conducted at schools before semester starts.

c. Field work

Before students going to the field, they were required to attend the Briefing Session with Faculty Service Learning Committee and Lecturers involved in the course during the first week of semester. During the session, they were given the details of service learning and its implementation including service learning requirements, guidelines and ethics, insurance coverage, driving licence and Unimas safety precautions, list of computer science projects, list of villages, list of schools involved, list of SL supervisors and list of Community supervisors.

As part of the fieldwork for SL program, students are required to conduct 3 visits: (1) early semester, (2) middle semester and (3) end of semester. The first visit is important meeting between students, community and faculty supervisor because students will be introduced to community by faculty supervisor and students will collect data from community regarding their collaboration project before students accomplish the task. In the second visit, students will present their works to community and get feedback for improvement. In the final visit, students will hand over the products/modules to community and project closure.

C. Phase 3: Service Learning Evaluation, Reflection and Monitoring

a. Final task, Reflection and Evaluation

After the visits, students will go back to University to complete their tasks and reflect in terms of learning units they have learned, individual development, soft skill, communication skill, technical skill. Students are required to complete their student reflection form and student log book. The student reflection acquires information such as experience and responsibility as a citizen, knowledge and skills gained during service learning, the impact of service learning to community, the degree of understanding of faculty course and character traits. Students also need to present their works at university and lecturers will evaluate their works. Lecturers who are teaching the course can also reflect on the contribution of service learning to the course content and faculty program. Following are the skills obtained by the students and their reflections from this service learning program:

b. Communication

“SL help us to develop our communication skills as we would need to communicate with the representative of the school frequently” (Project Report, Dec 2016)

“We have also learned new presentation skills to explain difficult things in simple terms” (Project Report, Dec 2016)

c. Sense of responsibility and leadership

“This is an important learning experience for us to understand our role as part of the society” (Project Report, Dec 2016)

“This service learning has given us so much experience and exposure to us. Real system development, planning and others thing related to database we learned and experienced ourselves” (Project Report, Dec 2016)

During the last visit by the students, the Community supervisor will evaluate the students in terms of various aspects including student-community relationship, communication skills, quality of work and performance, knowledge and skills. At the community level, the community supervisor also required to do reflection in terms of community impact, university-community relationships. Following are the reflections given by the community, namely, villages:

“Congratulations! This SL project is good, and we are very happy and looking forward to having more projects in future with UNIMAS/Faculty. SL project should be taken as a good example not only to local universities and private universities should incorporate this as well in their studies.”- Head of Village, Kampung Telaga Air

“The community is very impressed with the student’s achievement in developing the required system. On top of that, the students could understand the problem facing by the community and proposed a system by applying their knowledge and gave a full commitment to the community. An impact from this SL is the VTS system will be implemented in other area of N7 instead of Kampung Sungai Bedil Besar. Thus, the students gave a significant contribution to the community.” - Coordinator of SL Program, Kampung Sungai Bedil Besar

V. CONCLUSION

To ensure that institutions of higher learning are capable of producing graduates that are not only academically competent, but it is necessary to produce graduates whom are well rounded and holistic as well. This in line with the demand from the industry and other stakeholders. Service learning is one of the approach to inculcate civic responsibility within students and to enrich students’ learning experience. This paper proposed a well-rounded methodology on the implementation of a service learning program within an academic course. A case study based on the recent implementation of the service learning program using the proposed methodology was discussed in detail. The outcome of the service learning program is very encouraging from all the stakeholders involved. In future, the proposed methodology will be used by all the faculties within UNIMAS as the basis for service learning implementation within the respective faculties.

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