Education's purpose is to replace an empty mind with an open one.
- Malcolm Forbes

Learning without Borders: Community Based Learning in a Development Setting

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Abstract
In this paper we describe an experiment with an international variant of community-base service learning. We describe the underlying motivation and organization. We also provide some initial results.

1. INTRODUCTION

Community-based service-learning (CBSL) is not a new concept in educational science. It was already examined in the 1920's (see [10]) . There seems to be a revival for approaches that emphasize the connection of theoretical knowledge to the contexts of its application. Some people relate this to new ideas to bring Science under the attention of a broader audience, especially girls. This approach shows Science as a socially motivated activity.

The Community Outreach Project course (COP) has been set up as a community-based service-learning course. It integrates academic learning and community service for bachelor students of various disciplines and different cultural backgrounds, in an international setting, using modern information and communication technology.

The central theme in the COP approach is chosen to be ICT introduction and education. As such we are interested in projects that introduce ICT in primary education, in setting up information centers (telecenters), or building a sustainable ICT infrastructure in a particular society-rich context. We have been inspired by the experiences from the University of Pretoria, as described in [4].

In COP community-based service-learning is elaborated as a form of experiential, practical education in which students engage in international activities that address human and community needs, together with opportunities to promote student learning and personal development in the global context of a multi-cultural, international setting. It is seen as an appropriate approach to prepare students for their careers not only in public service, but also in academia and industry. It also prepares the students on their later tasks as managers by training principles of lean management.

We have extended in COP the concept of community-based service learning with an international component. The globalization effect caused by the introduction of the Internet offers all kinds of new opportunities for cooperation worldwide. This way it is more obvious that students build and relate to international communities.

In this paper we describe the motivation and set-up of the COP course. We will also describe our experiences with this course, and show how local students have been involved by forming mixed project teams. We describe the overall structure for communication and cooperation during the start-up phase when the students from both countries are yet to meet each other but still have to prepare a common project plan.

The description is made primarily from the point of view of the developed countries seeking cooperation with developing countries. In later phases we aim at a more symmetric approach.

Our hypothesis in this paper is that students who participate in an international community based course are better prepared for their professional career. This paper may be seen as a proof of concept for this hypothesis.

The layout of this paper is as follows. After the introduction, we describe the main aspects of community-based learning in an international setting. This is followed by a section on Appropriate ICT and its application in our context. This enables us to describe the formula of the proposed course in section 4. In section 5, we will outline some experiences of our yearly repeating course. We close in section 6 with some conclusions and describe next steps.

2. INTERNATIONAL COMMUNITY-BASED LEARNING

In this section we provide some basic definitions regarding communication-based service learning. In [4] the concept of community-based learning (also referred to as service-learning or community-based service learning) is introduced as:

> *Community-based learning is the broad set of teaching/learning strategies that enable youth and adults to learn what they want to learn from any segment of the community. It may also be defined as experiential learning where students and lecturers collaborate with communities to address problems and*

issues. Simultaneously both are gaining knowledge and skills and advancing personal development. There is an equal emphasis on helping communities and providing valid learning experience to students.

See also the definition in [6]. In [2] the author studies community-based service learning in the context of management studies. This is formulated as:

> *Community based service-learning is a form of experiential education in which students engage in activities that address human and community needs, together with structured opportunities designed to promote student learning and development.*

[2] concludes that the following skills are trained by community-based service learning:

> *Service-learning appears to be a promising means of developing such managerial skills as leadership, critical thinking, teamwork, and cooperation.*

In [3] the limited application of community-based service learning in Engineering Studies is reported:

> *Service learning has been widely adopted within higher education nationally in many disciplines and offers engineering a compelling environment to meet many of the EC 2000 criteria that may be difficult to integrate into traditional engineering courses.*

But it also is reported that community-based service learning may offer new opportunities to bring engineering to the attention of a broader audience:

> *There is also a growing case that service learning presents opportunities to attract underrepresented groups to engineering through the context of community-based projects. Despite the vast potential for service learning, engineering has lagged behind most other disciplines in the acceptance of this pedagogy.*

We have not been able to find references to international approaches to community-based learning. There are initiatives with an international component, such as Facing the Future ([7]), a project that focuses on 'Education on Sustainability and Global Issues'. The International Service Learning supports international service projects ([8]). The National Service-Learning Clearinghouse Learn and Serve America's National Service-Learning Clearinghouse (NSLC) operates America's premier website supporting the service-learning efforts of schools, higher education institutions, communities, and tribal nations ([9]).

The international formula for COP provides the opportunity to set up international learning cycles for the participating students and teachers. This is supported by modern ICT methods and tools. Note that these methods and tools require the participating institutions for higher education to make a technological investment which is modest when Appropriate ICT techniques (see next section) are being used.

Our definition for International Community-Base Service Learning (iCBSL) adds the following extension to community-based service learning definitions:

> *The international variant of community-based service learning adds the strategy to extend experiential learning within an international debate.*

We expect that by the international variant of community-based service learning students will also develop the following skills:

- Cultural awareness
- Global leadership
- Flexible attitude
- Communication strategies

3. APPROPRIATE ICT

Appropriate Technology (AT) is an applied engineering science suitable to the level of economic development of a particular group of people (see [1). Ideally, AT is decentralized, can be used and operated by most of the concerned citizens (i.e. does not require outside operators), uses local or regional fuels and materials in an efficient manner, and involves machines that can be locally repaired. It is sometimes called "alternative technology" and sometimes used for the "best choice" of a technology no matter how complex ("green technology") (Wiser Earth).

Appropriate Technology has been applied in many domains such as architecture, building, energy and water supply ([5]). There have been a few Appropriate Technology initiatives in the domain of ICT, such as One-laptop-per-child (laptop.org) and the Simputer (www.simputer.org) have tried to provide appropriate hardware, Damn Small Linux (www.damnsmalllinux.org) and UbuntuLite (www.u-lite.org) try to provide software solutions for low-cost hardware. The aspect of organizational change has not received much attention. Appropriate ICT takes a closer look at the complexities of ICT projects and integrating organizational change. This is the main connection between Appropriate ICT and the philosophy behind the Community Outreach Project.

Appropriate ICT is defined by Van Reijswoud and de Jager [1] as "the integrated and participatory approach that results in tools and processes for establishing Information and Communication Technology (ICT) that is suitable for the cultural, environmental, organizational, economic and political conditions in which it is intended to be used". The theoretical considerations are based on the distinction between product - the technical artifact itself - and process of introducing this artifact into the target organization or the respective environment. The process perspective is vital during the implementation phase and is guided by Community Informatics (CI) practices, involving the community itself in the adaptation of the ICT artifact.

Given these theoretical considerations, the proposed Appropriate ICT Framework is based on the traditional Systems Development Life Cycle (SDLC) and extended with tools and approaches which shall guide the ICT solution to greater appropriateness and thus effectiveness in implementation. A basic set of tools is given and the Appropriate ICT Framework encourages to propose further tools which address cultural, environmental, organizational, economical and political aspects of ICT projects. Furthermore, a set of key guiding questions integrate the 10 rules of AT and are structured along the phases of the Systems Development Life Cycle.

In the Community Outreach Project culture plays a central role. In our projects we pay special attention to Organization, Economy and Political climate and Environment. We will discuss this in the next section in more detail. Roughly speaking, the organizational embedding plays a major role in all COP projects, and by using a smart approach we aim to make this embedding effective. In educational projects, the economic value comes from empowerment results. The Political climate is respected in the COP projects, but the projects themselves have no political intentions. By using techniques of lean management and incorporating smart grid projects, we also have the Environment within the scope of the Community Outreach Project.

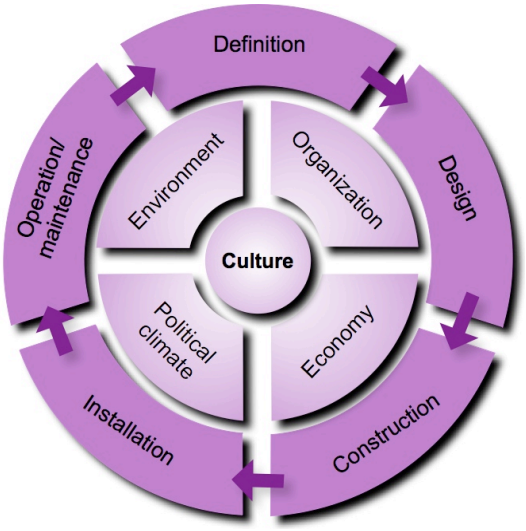

Figure 1 Focus of the Appropriate ICT Framework

Note that Appropriate ICT fit well with the principles of lean management, a management style that require the expenditure of resources to be motivated only by the creation of value for the end customer.

4. THE COP FORMULA

The main target of the bachelor course COP is that students are aware of the fact they can add value to someone else's circumstances, and improve them by sharing their knowledge and skills with those who are deprived of many resources. As a second effect, also of great value is that they learn to appreciate a different culture by doing a project in another country, where circumstances are totally different and values and traditions have another meaning than what students are familiar with. The choice for a developing country is motivated by our wish to show the students the differences, making them to realize there may be more options. This will give them a deeper insight in their own values and stimulates reflection on their own position in society.

The end terms of the course may be summarized as follows. After successful completion of this course, students

- can cooperate in a project aiming at improving the ICT infrastructure, especially in a different culture.
- can orient themselves on the special circumstances in the context of a society-rich project
- can define their own role in such a project, and can relate this role to their professional attitude and skill development.
- can reflect on the applicability of their own knowledge and skills in a new environment.
- can reflect on their own contribution, progress and effectiveness.

- know how to introduce innovative technology, ICT in particular, in an appropriate way.
- can cooperate in a multicultural, multidisciplinary and international project team.
- can apply scientific methods and technique an a concrete setting.
- are aware of the impact on society by introducing ICT.

The projects all have a clear impact on the local community and society at large and serve both students and the local partners. It strives to bridge the knowledge gap with a strong focus on gender issues and poverty reduction and usually is carried out in the deprived areas of a country where the need for social development is high and just some base infrastructure is available. Projects are set up according to the guidelines from the Appropriate ICT methodology (see [1]). This way there also is a clear relation with techniques from lean management such as Six Sigma.

4.1 The overall formula

The structure of the course is as follows. The COP projects are organized as a mini-internship of three weeks. Students are prepared intensively by following weekly lectures consisting of technological, educational and cultural content, next to guest lectures from the various angles, inviting experienced speakers from the field. With this information students have to formulate their project plan for the chosen project.

Students will carry out their project together with one or more other students. An essential part of the preparation therefore is team building. As these students come from different disciplines tabulating is an important ingredient of the course structure. Furthermore much attention is paid to setting up stable contact with the project owners at location. This is one of the key factors to a successful outcome and further continuation of the whole project.

The local projects usually have an educational component, but also may have a more technical nature. ICT will be a main tool in all our projects used for improvement and development of individuals and the addressed communities.

The local projects are for example a secondary school in the townships of Lusaka, Zambia, where ICT training and teaching material is required, or digitalizing the archives of the City hall Service in Gondar, Ethiopia. Papua New Guinea, Nepal, Uganda, Ghana and India are some of the other countries where a student can participate in project development.

After the mini-internship each student has to deliver an evaluation report in which a clear overview of methods and results are summarized as well as a personal reflection on their own experiences is highlighted. The report will also be used as feedback and recommendations for the local project partners.

The grading system is based on the following 4 deliverables: project plan, practical assignment, evaluation report and the final presentation of project results.

4.2 Sustainability

Special care also is taken to sustainability and continuity. This requires special attention to the acquisition of projects. For each project not only problem ownership should be clearly defined, also solution ownership is an essential issue. This dual ownership is of great importance during all project phases.

During project execution, the 3-level approach is used meaning that the project should preferably be executed at the top levels of the so-called control pyramid:

1. Execution level: student, learner level,
2. Management level: teacher, trainer level,
3. Strategic level: board, community level (high responsibility, policy makers).

By using this approach commitment and project ownership will be created and are seen as critical factors for success of a project. The execution level implements, the management level coordinates then the strategic level makes decisions on policy and also provides for continuity and sustainability.

For example, the students design a network structure for a new building. During the preparation phase in the Netherlands they write their Plan of Approach. At the project location they explain their approach to the executants and assist them. Instructions and way of working will be shared with the management/teachers. Furthermore leaders will be addressed to integrate the newly gained structure, knowledge and approach into their policies.

Figure 2: The control pyramid

4.3 International cooperation

The COP formula is an innovative model for collaborative learning in higher education that adds value to the traditional specialized knowledge that students gain through the single discipline. The community based learning method is stimulating student and faculty interaction, across various disciplines and integrating these specific study directions into one international course. By design the COP formula is focusing on a common goal with the complexity of working with different study backgrounds and skills in an international setting. Students gain a greater appreciation for technical or non-technical considerations and increase their insight concerning research processes and methods as well as technical or non technical approaches.

Having executed these real world projects in an international environment, both students and local partners will benefit from this intercultural mix of skills and professions. A developing project usually requires a broader range of skills and knowledge rather than just focusing on one specialization. From experience we have learned that a mix of ICT and Education as professional ingredients is successfully contributing to carrying out a project and also helps to meet the community demands on development and improvement of their situation.

In this particular course another component is added as part of creative team working and project development. By working across borders and teaming up with students in other countries, with similar backgrounds, the cultural component stretches over the continents and stimulates participating students, instructors and communities to develop a flexible way of working, using all kinds of techniques and communication methods to work together adapting to different points of view and attitudes.

Using a common digital communication tool (such as an electronic learning environment) for transformation of material and assignments for those who follow COP from a distance, it is a challenge to both instructor and student to understand and interpret the given information and using it for the common project purpose.

4.4 The different kinds of projects

In COP we focus on projects that introduce ICT in primary education, in setting up information centers (telecenters), or building a sustainable ICT infrastructure for some society-rich context. These project types share building a sustainable ICT infrastructure as a central issue. Dutch students in general have a good feeling for defining an appropriate ICT infrastructure. ICT students are equipped with practical technical skills that they obtained by self-education as ICT in most cases also is their hobby. Also many non-ICT students developed such skills. The projects are selected such that these skills can be valorized.

The very reason for the introduction of ICT is the next main issue of projects. Students from various directions share a positive attitude in educational tasks in general, and especially for primary school children. We organize COP around students ICT and students Educational Science, but students from other study directions can also participate.

Next we select projects on their international status. We prefer projects where cooperation is possible with a local university. This means that the local university should have the opportunity to offer this kind of course with a comparable number of credits.

Finally, the overall requirements for projects should be that these can be used for an international bachelor level of various study programs. This means that the projects have to apply technology in an innovative setting.

This leads to the following (non-exclusive) list of project types:

- ICT and education
- Information centers
- Technical projects
- ICT and Gender
- Requirements projects

5. CASE STUDY

In this section we provide some more details of a special COP project, which is a cooperation between Makerere University (Kampala, Uganda) and Radboud University (Nijmegen, the Netherlands).

5.1 The COP project in Uganda

The COP project in Uganda is coordinated by RIC-NET (Rwenzori Information Centers Network) in collaboration with Makerere University (Kampala, Uganda) and Radboud University (Nijmegen, the Netherlands). RIC-NET is a community based Non-Government Organisation that coordinates all civil society organizations established for purposes of information sharing within the Rwenzori region located in the western part of Uganda, an area that is predominantly rural. RIC-NET seeks to provide the local communities in the region with relevant, reliable and timely information for improved livelihoods and sustainable rural development. RIC-NET has and continues to initiate and support community owned information centers that enhance timely information and knowledge sharing that is vital to the development of grass root communities in the Rwenzori region. RIC-NET supports 6 information centers spread within the 5 districts of its operations. It is through these centers that information is disseminated to the local communities. The region is predominantly agricultural and a lot of agricultural information for example on organic farming techniques, soil improvement, agro-forestry practices, seed security issues and post harvest management is disseminated through public-rural telephony services, audio-visual resources and most of the users tend to be farmers. Information provided has helped farmers improve the quality of their produce and increased income from strategic competition.

The Information centers require support in terms of training facilities, technical expertise and information dissemination technologies and advocacy that enhances community initiatives in information, knowledge, skills and technology sharing and exchanges. Many times, information has to be translated and re-packaged into a local language and disseminated to the villages by the information centers. Some of the challenges faced by RIC-NET as a coordinating body and the information centers include

- Difficulty in communicating and sharing information from RIC-NET to the information centers and vice versa.
- RIC-NET having too much information with no data storage mechanism.
- The information centers have been equipped with computers but many of the workers are computer illiterate with not much experience in secretarial services.

The COP Project students are involved in the development of a network, a data storage technology (or database) as well as a website and blog to facilitate information storage, flow and sharing from the community through the Information centers to RIC-NET. Some of the students are preparing training manuals in computer applications and will be involved in teaching the information centers' workers basic secretarial skills for example, typing, printing and photocopying as well as internet usage as a way acquiring more information to disseminate to the local communities. The workers having gained some computing skills will be in a better position to train other community members in ICT use. Maintenance manuals are also being developed for the Information centers.

The local students partnering with the foreign students seem to enjoy this community based learning idea. Students have gained a lot of information especially from the lectures on implementation of ICTs in developing countries and understanding cultural differences that have been given by experts in international development projects that has been accessed through the blackboard suite of Radboud University. Ugandan students have to some extent been able to appreciate the Dutch culture through interacting with some of the Dutch students on the project. The research skills gained by the local students through participation in the COP will continue to help the students in coming up with different project ideas for their local communities even when COP has ended. Local students have been able to learn how ICTs have been integrated in developed countries and the different technologies that can be used for community projects. Students are also able to share technical skills with the foreign counterparts. The main challenge for the Ugandan students has been the mode of communication. Email and blackboard are the main forms of communication and information access. However, with very unstable and expensive internet access in Uganda, the flow of information has not been as smooth as the students may have needed it to be.

The local communities in the Rwenzori region are looking forward to learn how ICTs can help them to effectively undertake and improve their activities like farming/ agriculture. COP will help community members to utilize ICT skills they will have learned for life long learning as well as sharing of information with one another. Through ICT training, communities will be able to conserve local knowledge through ICTs. Furthermore, knowledge of ICTs will help in the creation of self-employment opportunities for example in simple ICT projects to help fellow community members. This is one aspect of sustainable development that the COP offers to the local communities. The challenge for the local community may be the language barrier since many of community members are illiterate and may only be able to speak the local language. This barrier will be overcome by having Information center workers who understand and speak both English and the local language to help those that cannot understand the trainers.

RIC-NET as a coordinating body is pleased that such a project is being implemented to improve their performance in terms of access to information and dissemination of information. The Teaching staffs involved with the students have had an opportunity of knowing how learning can be enhanced through community outreach projects. With COP idea, staffs are able to help students understand their communities and get involved in ICT projects that are relevant and solutions that are usable by the communities.

5.2 Experiences so far

The Community Outreach Project has been offered to bachelors students with various backgrounds for some years

now, having executed projects in several countries like Zambia, Ghana, Ethiopia, South Africa, Uganda, India, Nepal, Suriname and Papua New Guinea. The results so far have been very promising. Each project is evaluated by both project stakeholders and participating students. An evaluation report including recommendations for continuation of the project is written and shared with the project owners and presented to other students. A reflection section is also delivered whereby personal experiences are described. Most projects showed sustenance. The students reported that they experienced COP as their most exciting and instructive course.

Below some personal reflection experiences by some of the COP students who went to South-Africa in 2008.

> "*I assume thinking 'out of the box' is one of the academic goals I achieved. Just the experience of living and working in a culture that is so different from your own is really valuable."*

> "*Apart from the very important cultural aspects, I can also confirm the suspicions I had on the importance of education. It is simply unacceptable if someone is responsible for something without even basically understanding it. In general, I believe proper education is one of the most important Millennium goals, as understanding the situation is the first step to improving it."*

> *"It isn't that some things weren't know before, couldn't be reasoned out. But to truly feel a semblance of sense in them, have a feeling of understanding, things have to be experienced. That I would say is the most valuable academic development. To enhance a critical view on every aspect of life, from simple to complex. To shift marginally how one perceives the world around oneself. To once more point out even the simplest thing, the splendor of the dutch landscape being a prominent example, that had just foregone memory. In an academia one should learn more then simple knowledge, one should broaden horizons on every level. And that is something that is very well achieved by a project like the Community Outreach Project."*

Although our experiences are very limited, they seem a sufficient argument to support our research hypothesis. A new element which has been added this year is the Occupational Personality Questionnaire (OPQ, see [11]), whereby students fill out a questionnaire based on personality and skills recognition. The values described in the results of the test will give the students a better insight of their personality, preferences and capabilities. This method will be used before and after the COP project visit. There are no results as of yet to give an conclusion to this used method.

6. CONCLUSIONS

In this paper we have described an experiment with an international variant of community-base service learning. The results have been very promising. As we have based ourselves in this course on existing methodologies, we can guarantee that the course has sufficient content for an international bachelor course. Besides, a solid base is a critical success factor for a sustainable course.

In the future we plan to improve the cooperation formula, and to obtain a symmetric partnership between the participating universities.

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