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Developing Relevant Environmental Education in a Rural Community in Malawi

Desenvolvendo educação ambiental aplicável em uma comunidade rural no Malauí

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Abstract

This article highlights how school science pedagogy can be reconceptualized to infuse environmental problem solving and social transformation into a rural community in Malawi. Historically, the environmental education curriculum in the country is teacher-driven and theoretically-oriented, thus offering limited references to the local communities. Through participatory action research, the science teaching and learning practices were reconceptualized to address local environmental challenges. In the process, learners became active agents in the local community to understand and address environmental challenges. By prioritizing environmental issues and concerns within the community through Participatory Rural Appraisal (PRA) tools, the learners facilitated their own learning activities and developed class-community action plans. The ability to take action towards reforestation was empowering to both the students and community members, as the collaborative project demonstrated a community's ability to identify issues of concern, take action, and work towards the resolution of the issue to improve their environment.

Keywords: education for sustainable development, environmental education, participatory action research.

Resumo

Este artigo destaca como a pedagogia escolar das ciencias pode ser reconceituada para inspirar a solução de problemas ambientais e transformação social em uma comunidade rural no Malauí. Historicamente, o currículo de educação ambiental no país é dirigido pelo professor e orientado para a teoria, oferecendo assim limitadas referências para as comunidades locais. Através de pesquisa-ação participativa, o ensino de ciências e práticas de aprendizagem foram reconceituadas para enfrentar os desafios ambientais locais. No processo, os alunos tornaram-se agentes ativos na comunidade local para compreender e enfrentar os desafios ambientais. Ao priorizar tópicos e preocupações ambientais dentro da comunidade pelas ferramentas de avaliação rural participativa (ARP), os alunos facilitaram suas próprias atividades de aprendizagem e desenvolveram planos de ação na comunidade. A capacidade de tomar ações no sentido do reflorestamento foi delegada tanto para os alunos quanto para os membros da comunidade, o projeto colaborativo demonstrou a capacidade da comunidade para identificar questões de preocupação, agir, e trabalhar no sentido da resolução do problema para melhorar o seu ambiente.

Palavras-chave: educação para o desenvolvimento sustentável, educação ambiental, pesquisa-ação participativa.

Introduction

This research project was conceptualized within the scope of Project SUSTAIN, a cooperative venture involving researchers at universities in Malawi, South Africa, Zambia, Norway, and the US. Project SUSTAIN focused on equity and empowerment as an approach to sustainability, through a more socially responsible science education. The objectives of Project SUSTAIN were

twofold: firstly, to encourage joint research amongst universities in sub-Saharan Africa on various aspects relating to how students from diverse backgrounds could be granted access to science literacy; secondly, to explore new ways of making science education more relevant, socially responsible, and welcoming to students/communities with diverse backgrounds and interests.

Project SUSTAIN was based on the notion that science education ought to be transformed in order to meet the needs of both our global and local societies (KYLE, 2006). Science is still seen as a body of knowledge that should be understood and mastered, rather than something that interacts and responds to the lives of the learners in the context in which they live (GRAY et al., 2009). In many countries, science education practitioners seem to be more concerned with transferring canonical knowledge than with facilitating students' conceptualization and understanding of relevant scientific knowledge for the purpose of community development and social transformation (KYLE, 2006; ONWU; KYLE, 2011). Thus, science education is perceived as irrelevant within many local communities in developing countries, since it does not contribute to the knowledge necessary to transform and improve the local situation (MALCOLM et al., 2009) and concomitantly address issues of sustainable development (ONWU; KYLE, 2011).

This study offers insight into how to transform science education in developing countries to be more socially responsible. An empowering pedagogy should consider the socio-cultural context of the learner, and thus be informed by: values of social justice; learning theories that emphasize critical discourses to recognize the alienating contradictions experienced in learning science; and pedagogy that is action-oriented, issue-based, participatory, and critically reflective.

Contextual Reality

In 2012, Malawi's Human Development Index (HDI) was 170th among the 187 countries ranked by the United Nations Development Programme (UNDP, 2013). Approximately 65% of the Malawian population of 16.7 million lives below the poverty level; about 84% live in rural areas and depend on subsistence agriculture for their livelihood. With a population growth rate of 3.2%, Malawi is one of the most densely populated countries in sub-Sahara Africa, leading to profound pressure on the country's resources. Such pressure is characterized by serious food shortages, since agricultural production does not reach its maximum potential due to a number of factors, of which environmental degradation caused by deforestation is a very important one. Over the course of the past fifty years, the topsoil has become compacted by animals or eroded by runoff and wind. Today, the nature of livelihoods in most communities is characterized by efforts to barely survive. Glasson et al. (2006) assert food shortages and famine are worsened by poor health, mainly from malaria, HIV AIDS, and waterborne diseases.

Historically, science teaching and learning in Malawian schools is characterized by didactic teacher-centered approaches, encouraging the memorization of technical terms for examinations. Such teaching and learning transpires without considering the broader socio-cultural-political influences (GLASSON et al., 2006). This occurs despite the potential of science education in developing countries to influence solutions to socio-cultural issues, which include "adequate health care, hunger, malnutrition or undernourishment, lack of safe drinking water, poverty and un/under-employment, subsistence agriculture in small holdings, soil erosion, HIV

AIDS, deforestation, reduction of biodiversity, disease, and many other related social concerns" (ONWU; KYLE, 2011, p.9-10).

Values of Social Justice

This study emanates from a conviction that: 1) the values of social justice can influence educational practice, and 2) the social function of education in impoverished communities can be achieved through education that is both empowering and transformative. Dewey (1916/1966; 1938/1963) and Freire (1970/1993) espouse the virtues of education to bestow on learners democratic citizenship and emancipatory experiences. Education is a means of engaging with the world. Such a perspective underpins this study and its focus on a more socially responsible science education. An emphasis on the school's ties to the community and the local environment has implications for achieving educational goals of self- and social-empowerment. The Malawi Growth and Development Strategy (MGDS) reports (GOVERNMENT OF MALAWI, 2006; 2012) focus on the social-economic role of education.

With education being recognized as integral to fostering empowerment and improving the well-being of citizens, the question of what a relevant education is becomes an important factor in achieving those goals. In Malawi, responding to this question is particularly crucial, since secondary education is terminal for the vast majority of young people. The Malawian education system faces many challenges; and, despite the need to develop curricular innovations to overcome such challenges, schools continue to use methods of teaching and learning that promote what Freire (1970/1993) refers to as "the 'banking' concept of education" (FREIRE, 1970/1993: 53). In such a system, learners have no meaningful role, other than being passive recipients of knowledge. He views banking education as having dehumanizing qualities and he dichotomizes between the banking model and problem-posing education as follows:

> *Those truly committed to liberation must reject the banking concept in its entirety...they must abandon the educational goal of deposit-making and replace it with the posing of problems of human beings in their relations with the world…Liberating education consists in acts of cognition, not transferrals of information. (FREIRE, 1970/1993, p.60)*

The goal of education as empowering demands pedagogy that will enable learning beyond mere reception of knowledge. Learning that empowers should facilitate learners' abilities to understand their world, engage with and critically examine issues, and offer an inspiration to get involved in decision-making and action-taking. It is for this reason that the concern of the present study was to improve pedagogy in science, so as to enable learners to anticipate challenges pertaining to environmental degradation and social well-being and participate in efforts to overcome environmental issues within their local community.

Nsamenang (2005) states in traditional African education, young people are encouraged to observe and learn from their involvement in the life of the family and in the cultural and economic activities that occur within the community. In essence, life is an experiential and place-based kind of learning. Jegede and Aikenhead (1999) emphasize the tradition of school-based science learning is quite unlike everyday learning processes. The result is that the student

has to negotiate a transition between the sub-culture of their community and the sub-culture of the science community. The traditional African education espoused by Nsamenang (2005) transpires in rural communities where knowledge is passed on from generation to generation through observation and involvement (and not written anywhere). A good example is food preservation; there are some traditional ways of preserving maize after harvest (e.g., in some parts of Malawi particular types of roots are soaked in water and the liquid formed acts as an insecticide, which prevents/reduces weevils and ants). Men in the communities take their sons along when doing this, thus passing on their knowledge and the young learn by observing and participating. Similarly, women involve their daughters when drying vegetables to preserve them for the dry season (during the rainy season there are plenty of fruits and vegetables, but they are scarce during the dry season).

Thus, there is an inherent contradiction as to how the young learn in their communities and how they learn in school. This contradiction relates to the study since the learning approach herein actively engaged the students in their own learning and also actively engaged them with their community. While participating as they learn is similar to their traditional education, collaboratively involving their elders in the learning process was something new – it is the reverse of what they and the community experience in daily life.

Focus of the Research

Using historical timelines, constructed through Participatory Rural Appraisal (PRA) methodology (NARAYANASAMY, 2009) in which trends of an issue are followed, students worked with village elders to document environmental events that could be recalled, such as the devastating drought of 1949 and the severe flooding of 1991. Constructing historical timelines is of importance since there is no written record of such events within the community. The learners engaged in reflective activities based on the timelines constructed. That is, they deconstructed the historical trend of the issue, the factors that must have influenced such trends, the scientific basis for the trends, while identifying additional field exploration that might be required. Through these community-based activities, the learners identified the major trends of environmental degradation since the 1950s, characterized by: a significant loss of woodlots, reduced agricultural productivity, increased soil erosion and runoff, as well as siltation and the reduction of water bearing capacity of rivers.

The research occurred in a village called Chamalaza, located in the area called *Nkhorongo*, meaning thick forest. Today, however, there is no evidence of the *nkhorongo* as the land is barren, erosion is widespread, and what once was a river through the area is now completely filled in as a result of siltation. This village was selected by the students as they felt it represented the region with the most environmental degradation from among the seven villages surveyed. Located in the northern region of Malawi, this area was considered to be safe from degradation by the elders when they were youth. The community is very poor, and they consider themselves to be farmers, although when we visited their village we found them making charcoal or baking bricks. The process of baking bricks leads to environmental degradation, since tremendous numbers of trees and their roots are used to bake bricks and the bricks are made from the most

fertile soil; this process of deforestation had been taking place for 50+ years. Village elders recalled as youth being able to gaze into the distance at lush forests.

Alice and the collaborating team created spaces where students could participate in knowledge creation and experience their knowledge being valued and legitimized in the science teaching and learning practices. The study explored the feasibility of developing pedagogy to enable the achievement of transformative learning goals. Such pedagogy should motivate learners to think critically about environmental and social issues and to take action, whilst in the process of conceptualizing scientific concepts. In the process of learning, students experienced their culture as valid through their discussions with the village elders. The hope was that principles of social justice would continue to inform educational practices experienced by the learners in the future; that students would experience a "commitment to fostering the attitudes, skills, and knowledge required to engage and act on important social issues" (WESTHEIMER; KAHNE, 1998, p.2).

The classroom teacher and Alice also reflected on their own learning as they deliberated how to encourage learners to take charge of their learning. The focus on generating knowledge was interlinked with the focus on developing practice. The research focuses on engaging with values of social justice in science and environmental education to facilitate the achievement of goals of social transformation and well-being, learning from educational practice in order to improve that practice, and contributing to educational practice and theory.

In the learning interventions, the creation of opportunities for learner experiences in real problem solving and engagement with the community was facilitated. Learners contributed to the process of developing knowledge, meaning, and appreciating the possibilities of knowledge utilization. The hope was that learners might attach personal value to the school knowledge and see the relevance of science education. This is in line with the goal of seeking to ensure that principles of social justice would inform educational practice (AYERS et al., 1998; SHOR, 1992; SHOR; FREIRE, 1987). Throughout the experience, participants reflected on the educational process and developed their own theories of practice.

Problem Statement

Malawi faces serious loss of natural resources and consequent degradation of the environment. The major cause of unsustainable utilization of natural resources has been identified as the challenge of people not having acquired knowledge, values and positive attitudes to individually or collectively take positive actions to address environmental issues (GOVERNMENT OF MALAWI, 2002a; GOVERNMENT OF MALAWI, 2010). The Malawi Poverty Reduction Strategy (MPRS) (GOVERNMENT OF MALAWI, 2002b) identified limited access to land, low education, poor health status, limited off-farm employment, and lack of access to credit as the causes of poverty in the country. The Malawi Growth and Development Strategy 2006-2011 (MGDS) (GOVERNMENT OF MALAWI, 2006) priority areas include:

- Education, Science and Technology which is responsible for the promotion of education in the country.
- Climate Change, Natural Resources and Environment Management which focuses on

mitigation and adaptation to climate change, and prevention of environmental degradation.

- Youth Development and Empowerment whose aim is to prepare the youth and endow them with resources for active participation in the development of the country.

The current goals of education in Malawi have been linked to alleviation of social issues, especially poverty, disease, and environmental degradation. Malawi policy documents such as Malawi Growth and Development Strategy (MGDS), Malawi Poverty Reduction Strategy (MPRS), and National Education Sector Plan (NESP) discuss education as a vehicle to poverty alleviation. The two MGDS policy documents spell out the development needs of Malawi. The overall objective of the MGDS is to reduce poverty through sustained economic growth and infrastructure development (GOVERNMENT OF MALAWI, 2012). In order to achieve this goal, MGDS identifies six priority areas, including *Social and Rural Development,* of which *Education* is a subtheme.

Yet, schooling is oriented towards memorisation of facts to prepare for public examinations. Whereas the policy on education in Malawi emphasizes the role of education in poverty alleviation and national development, most pedagogy in science education is not guided by such values (GLASSON et al., 2006; GOVERNMENT OF MALAWI, 2012). Students are not engaging with the local environment and the issues therein, even when they are learning about the environment. It was important, therefore, to investigate pedagogies that could motivate learners to think critically about the environment and take action whilst in the process learning scientific concepts. Ideally, this would empower students to take initiatives in solving environmental and social problems and enable action competence.

Specifically, the aim of this study was to explore ways in which learning about the environment in secondary school biology could lead to active problem solving in environmentally degraded areas of a rural community in Malawi. The goal was to enable learners to see relevance in what they are learning in school science, and empower learners and their communities to be able to identify issues and assume responsibility for seeking ways of solving such issues. The primary research question guiding the study was: How can we develop pedagogical approaches for active problem-solving in the environment through the secondary school biology curriculum of rural communities in Malawi.

Using Participatory Rural Appraisal (PRA)

Data were collected using Participatory Rural Appraisal (PRA) tools (NARAYANASAMY, 2009). PRA refers to participatory approaches that emphasise local knowledge and enable local people to make their own appraisals, analyses, and plans. These approaches are based on the concept of learning by doing, and emphasize participation, teamwork, flexibility, and triangulation. Narayanasamy (2009) views triangulation as a form of cross-checking for validating the data and information collected. He draws upon the work of Mikkelsen (2005), who suggests five types of triangulation: data, investigator, discipline, theoretical, and methodological triangulation. Narayanasamy (2009) has synthesized these types into three forms focused upon the composition of the teams, the sources of information, and the data collection tools and techniques. He notes that since PRA identifies a variety of methods to appraise the situation, that the appraisal generally involves a combination of methods:

> *For instance, transect or group walk involves direct observation, semi-structured interviewing, transect and transect-based resource mapping. PRA emphasizes on presenting the data and information in a visual form. With visual sharing of map, model, diagram, etc., all who are present can see, point to, discuss, manipulate and alter physical objects or representations. Triangulation takes place with people cross-checking and correcting each other. (NARAYANASAMY, 2009, pp.33-34)*

Further, Narayanasamy (2009) asserts:

> *The sources of information under PRA are more than just one. Information flows from people, places, and events and processes. For instance, while sketching the timeline of a village, the oral testimony of the people is cross-checked by looking at places and also by recalling events and processes which occurred in the village at different periods of time. (NARAYANASAMY, 2009, p.34)*

The Gandhigram Rural University situated near Dindigul in Tamil Nadu, India, introduced PRA in the early 1990s. PRA developed out of dissatisfaction with research models where external professionals imposed solutions on communities; often these solutions only lasted as long as the funding since the community was seldom invested in either the project or sustaining the project. PRA tools were developed to facilitate the process of people actively participating in different stages of the development process, primarily in rural communities in developing countries. “The basic logic for the introduction of PRA in development work is that the success of any development intervention depends on the confidence built and the power given to people to decide and to take community initiatives” (NARAYANASAMY, 2009, p.23). These tools were designed in recognition of the need to allow even non-literate people to articulate their knowledge. As such, the significance of visualization in communication with people who might not read or write is acknowledged (SWANTZ, 2008). Maps, matrices, calendars and diagrams on the ground are used in PRA.

PRA is within the genre of an emerging iterative, participatory research process that seeks to understand poverty from the perspective of a range of stakeholders, and to involve stakeholders directly in planning follow-up activities. In the early 1990s, the World Bank developed the Participatory Poverty Assessment (PPA) and began to engage in poverty assessments to better understand issues and dimensions of poverty of importance to the community. The research was undertaken for the *World Development Report 2000/2001* (WORLD BANK, 2001) on the theme of poverty. The process of gathering the views, aspirations, and experiences of more than 60,000 men and women from 60 countries culminated in the *Voices of the Poor* project (NARAYAN et al., 2000a; NARAYAN et al., 2000b; NARAYAN; PETESCH, 2002).

The data collection tools that we used included semi-structured interviews, historical timelines, resource mapping, transect walks, focus group discussions, mapping, and role modelling. Alice instructed the biology teacher and the students on using Historical Timelines (NARAYANASAMY, 2009) to trace trends in history of a particular issue. The students worked in small groups and they met with key informants in the community and facilitated discussions on positive and negative environmental events and trends in history within the village and the influences/effects of such events and trends. Each group of students selected their key

informants based on characteristics that they should be elderly people who had lived in the village most of their lives, and who earned their livelihood by living off the land. Thus, key informants included farmers, village crafts-persons, and village leaders.

The discussions started with the current environmental situation in the village, the 'now', and the student facilitators would ask for recall of key events related to vegetation, water bodies, grazing land, soil fertility, agricultural practices, and the availability of natural resources. The students recorded the information by placing the events and the corresponding dates on the drawing of the timeline. They further asked the community members to make an analysis of the cause/effect consequences. Photographs were taken by villagers to record the environmental issues considered most important.

Back in the classroom, students presented the illustrations of the historical timelines and details of what the illustrations conveyed, along with photographs of areas of interest. The information was analysed through a problem-based learning model, which emphasized a type of learning in which students start with an original problem, discuss the problem, generate hypotheses based on their experience, identify relevant facts and learning issues, and seek information that might lead to the cycle repeating. The following guiding questions were deliberated:

- What is the trend in the condition of the environment?
- Which issues appear to be very serious? What criteria determine such seriousness?
- What factors must have influenced these trends?
- What is the scientific basis for these trends?
- What is the link between the community observations and scientific curricular concepts?
- What additional exploration is required to augment the explanation?

Reflective discussions further involved how the community observations correlated with scientific ideas. The biology teacher asked the students to reflect on whether the experience of holding the inquiry met their expectations and how they evaluated the community's attitudes toward students researching real issues within the community.

The students decided to follow up on the data collection in the village by arranging a performance so as to let the villagers reflect on the roles they play within their community. The village is located in a remote area in northern Malawi. The overseer is a local chief who is an elderly man who belongs in the family line of chieftainship. Over the past 50 years, the environment had become heavily degraded. The people living in the area are mostly poor subsistence farmers whose sole existence is dependent on the land. They have been living on this land since their ancestors settled in the 1880s. They supplement their income by cutting down indigenous trees, making charcoal and bricks, and selling it in the nearby town. The process of writing up the script facilitated reflective discussion relating actual issues in the community with textbook ecological concepts. The students did the performance at the next village meeting. In the drama, based on the data gathered, they role-played various stakeholders in the village whom they considered important in affecting the environment.

Evaluation procedures included reflective sessions by various groups of the participants, reflective journals, and evaluation questionnaires. Analysis focused on how the participants

experienced a pedagogical intervention that was action-oriented, problem based, and community engaged. The outline of the analysis follows the processes of the cycles, which were a community inquiry cycle, followed by the second cycle of implementation of a community-based, environmental learning strategy. Students expected community members to have some practical knowledge concerning aspects of environmental issues, but they were surprised at how detailed this knowledge was and how it was backed up by theoretical explanations. As one student observed:

> *I think these people are really observing what is happening to their environment[s]. Before I started talking to them, I had noticed environmental issues like soil degradation, soil erosion, deforestation, leaching and bushfires, and these were similar to what they observed.*

The surprise that many students expressed, however, was why the situation with the environment was still as bad as it was, despite the availability of local knowledge. This required further inquiry. As regards to the community's attitudes toward students undertaking this inquiry in their home area, most students indicated that contrary to their expectation, the community was very willing to talk to them and the elders were very happy to share their experiences with the young people.

Conclusions

Cultural propriety was very much an important consideration for students in terms of which age group should learn from the other. Normally, young people are expected to learn from elders. Nkemnkia (1999) elaborates about learning in the African context as follows: "there is always something to learn from 'the elder', from the 'wise' of the village" (NKEMNKIA, 1999, p.35). Wisdom comes from accumulated experiences or from "the unity between the past and the present" (NKEMNKIA, 1999, p.35). However, through PRA, the youth and elders were able to investigate issues and collaboratively learn together. What emerged was a shared understanding and mutual respect for working together to address community issues. During the project, the community realized that elders, and parents, can learn from the youth as well.

Wells and Chang-Wells (1992) indicate that the essence of education is dialogic co-construction of meaning between teachers and their students. In this study, the circle of this dialogue extends to the community. Through such engagement, students developed complex conceptual relationships and constructed notions of what knowledge is relevant. There was improvement in students' understanding of the environmental issues, such that their descriptions were richer and they could deliberate / discuss the relationship and complexity amongst issues. Before the visits to the community, the students' descriptions of major environmental issues within the community were mentioned as stand-alone / isolated issues. However, from the way students presented their findings from resource mapping and transect walks after engaging with the community, environmental issues were now being presented as comprising complex relationships. For instance, one group gave this description that connects issues of people's livelihood and coping mechanisms with the physical effects on the environment:

> *People cut trees for burning bricks; they also cut trees for settlement and for cultivation. They earn their living by selling bricks. [These] cause soil erosion which has led to low yield, hence people [have moved on to start] cultivating on the hills.*

Such complex ways of relating these local issues became the norm during the discussions following community visits and it was evident that this was how the community was discussing these issues as well. Additionally, although students had identified poverty as a cause for deforestation, the villagers view was more complex, involving the interplay of social, political, and economic factors. Such complex issues were highlighted during the role play. The students' depictions of the environmental issues from the role play are shown in Figure 1.

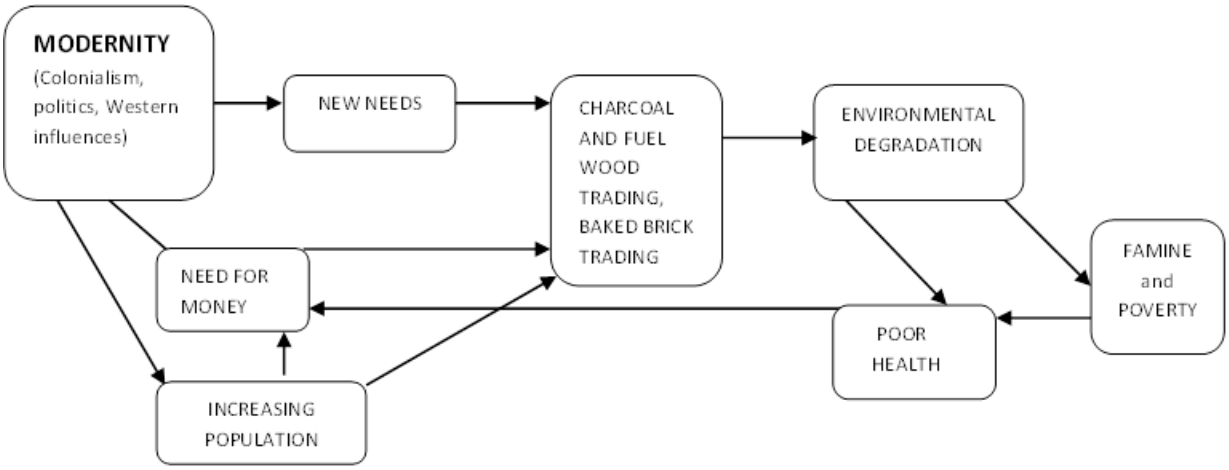

Figure 1: Students' depiction of environmental issues from the role play.

The intervention for this study was based on a pedagogy that allowed for a learner–activated teaching and learning process. The pedagogy followed a problem-based approach, where environmental issues in the community were identified / encountered at the beginning of the learning process serving as triggers for the application of problem-solving, critical thinking, and reasoning skills. The nature of the pedagogy was extended to community participation. The community was engaged in the identification of the problem, analysis of the problem situations, understanding of these situations, and action-taking to begin to address the issues. The local ownership of the environmental issues and the emergent solutions arising from the project evidenced a broader sense of empowerment within the community as they began to take action on issues of importance to the community-at-large that had been neglected for over 50 years.

The approach was effective at ensuring collaborative engagement involving secondary school students and their community. The teaching and learning practices were reconceptualized to address challenges in the local environment. Students experienced real-world participation in their community, enhanced their ability to identify, analyse and suggest solutions for real-world problems, and acquired knowledge of the local environment - all indicators of a self- and socially-empowering learning experience. The students contributed to social change through the process of lobbying the Mzuzu Botanic Garden for donations of seedlings for a tree planting exercise, which was carried out in direct response to the findings of the project. The Mzuzu Botanic Garden is one of three National Botanic Gardens in Malawi, established

with the purpose of conserving regional flora. The Garden engages in conservation activities and also sells seedlings to support their enterprise. In this case, they donated the seedlings in response to the request by the collaborative community project. Students also acted as initiators of dialogue on environmental issues within the community. In the discussions during the class-community meetings, issues were raised that led the community to make pertinent decisions on what issues were of urgent concern, such as bringing to a halt the wanton cutting down of trees.

The project also impacted the lives of students in unintended ways. Historically, most students in Malawi do not pursue education beyond high school, for a variety of factors not the least of which is the ability to afford post-secondary education. However, among this class of 52 students, most have gone on to further their education to become primary school teachers; one is pursuing a BSc at Mzuzu University and another at University of Malawi in Zomba; and of the two students who had become instrumental leaders in the project, one is a farmer in the village who aspires going on to agriculture school at some time in the future when he can afford to do so and the other is expecting to receive a government scholarship, that he has qualified for, to enable him to enter college in 2014.

The ability to take action towards reforestation was empowering to both the students and community members, as the collaborative project demonstrated a community's ability to identify issues of concern, take action, and work towards the resolution of the issue to improve their environment. This is in direct contrast to the 'typical' scenario in which communities expect government or non-governmental organizations to complete these tasks (even though often times the issues / needs identified by such organizations are not perceived by communities as priorities). Ideally the project will have a transformative legacy within the community for the next 50+ years.

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