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Democratic Processes to Overcome Destructive Power Relations and Sustain Environmental Education in Primary Schools: Implications for Teacher Education in Tanzania¹

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Abstract

This paper is based on a follow-up study of a participatory action research (PAR) project aimed at improving environmental education (EE) in teacher colleges and primary schools in Tanzania. The aim of the current paper is to discuss the power relations involved in sustaining the EE process initiated in the PAR project. We developed two research questions: “To what degree do the democratic processes in the PAR project enable the tutors, teachers, and local community members to continue developing EE while simultaneously addressing the environmental challenges?” and “In what ways do the power relations influence the further development of EE?” We conducted focus-group discussions and interviews with the college dean, tutors from the selected teacher college, and teachers from primary schools who had participated in the project, one year after the researcher left the project. In addition, we interviewed village leaders and local experts. Finally, we undertook nonparticipant observations. We found that, despite hierarchical decisions to transfer teachers, the EE learning processes started in the PAR project continued. We discuss the possibilities for strengthening democratic relations in the educational system in Tanzania through PAR, and recommend the inclusion of PAR in the teacher education curriculum in Tanzania.

Keywords: environmental education, educational governance, Tanzania, participatory action research, teacher education

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Introduction: Environmental Education Revisited

Since the 1970s, environmental education (EE) has become an important theme in education curricula throughout the world to address environmental degradation and restore community vulnerability related to climate change (Gough, 2013). After the Rio Declaration in 1992, EE has emphasised the economic and social aspects of environmental degradation. There has been a growth in sociocultural approaches built on active participation, problem solving, critical thinking, reflections on real-life challenges, and the application of knowledge. The intention of the approaches was to challenge environmental degradation where economic, social, psychological, and human resilience are important EE outcomes (Mandikonza & Lotz-Sisitka, 2016). The Thessaloniki Declaration in 1997 stressed the need for connecting formal, informal, and nonformal education to create opportunities for everyone to acquire knowledge, skills, values, and the attitude needed to address environmental challenges and attain social and economic prosperity, restoring collective goods for peace and cultural diversity (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2014). In Tanzania, EE is an important part of education from primary to tertiary level, and it is emphasised in education policy.

Environmental degradation challenges the sustainability of Tanzanian communities. The deterioration in the quality of the soil and water threatens the survival of 70% of the Tanzanian population—the segment of the population who depend on agriculture as their main source of livelihood. This is a major environmental concern that is addressed by the environmental topics in the school curriculum (United Republic of Tanzania [URT], 2010, 2013). Tanzanian educational policies emphasise the teaching of environmental topics across all levels of education as a sustainable strategy to address environmental challenges through educated citizens (URT, 1995, 2010). Around the world, educational policies highlight participatory teaching methods that encourage learners to experience environmental problems, and to share relevant knowledge and skills suitable for addressing these challenges. The policies also emphasise cooperation with local inhabitants through community activities that address environmental challenges. Accordingly, schools have responded to environmental challenges by integrating participatory approaches in the educational curricula. The rationale for participatory approaches stems from the possibilities for immediate application of ideas and the strengthening of local institutions. Hence, in the opinion of many authors, participatory teaching approaches are the ethical means to achieving sustainable community transformation through education (Nyerere, 1967).

After the Arusha Declaration (Nyerere, 1967), the Tanzanian government wanted to include schools in the process of social and economic change in Tanzania occurring at that time. During Nyerere's presidency in the 1970s and 1980s, the government considered the active participation of community members in local projects as the proper way to develop responsible citizens. Through meaningful learning activities, Nyerere wanted to develop collaborative education that was responsive to local conditions. Based on the philosophy of self-reliance, schools were intended to function as learning centres, not only for student teachers and pupils, but also for local community members.

To varying degrees, schools managed to serve their communities as local centres of excellence where community members learned about agriculture, livestock production, carpentry, and environmental sanitation alongside the basic skills of reading, writing, and arithmetic. The link between schools and local communities improved the literacy rates among adults, which became among the highest in sub-Saharan Africa during the 1980s. In addition, many local communities developed an increased environmental awareness and improved their strategies for coping with environmental degradation. For example, Ngoro farming systems opted for soil–water conservation methods and practices, thus controlling erosion on the hills of the Luguru and Kaguru highlands. Although most of the links between schools and local communities disappeared during the 1990s (despite the emphasis placed on these links in the curriculum), the concepts still influence educational practice in some schools today. Ahmad (2014) considered these linkages an opportunity for the revitalisation of relevant learning. Against this background, we conducted a participatory action research (PAR) project, which is documented in two previous articles (Kalungwizi, Gjøtterud & Krogh, 2018; Kalungwizi, Gjøtterud, Krogh, Mattee, & Ahmad, 2017). The aim of the current paper is to discuss the power relations involved in sustaining the EE process initiated in the PAR project.

Background: Repositioning Teacher Education for Environmental Sustainability

The education of teachers is a focal point when it comes to initiating the active teaching approaches that are relevant when teaching environmental topics. Education for self-reliance, which is also founded on experiential learning, has been a foundation of the revitalisation of active teaching in Tanzanian teacher education (Dewey, 1938; Freire, 1970; Nyerere, 1967). An important aim is to educate professionals who can spearhead educational transformation in Tanzania, enabling citizens to face the demand for improved local life in a democratic society (URT, 2001, 2010). Thus, teacher education emphasises participatory teaching and practical activities (URT, 2001).

Tanzanian government initiatives in teacher education have focused on the use of participatory teaching methods in the hope of educating professionals who can spearhead these approaches and democratic ideals in schools—and out into the wider community (URT, 2001). The government has taken these initiatives further by expanding teacher training through opening more teacher training colleges and by introducing teacher educational programmes into public universities. In addition, the government has expanded student loans to include more of the student teachers and has introduced private teacher training colleges to increase the number of teachers educated in participatory approaches. Although these initiatives have increased the enrolment rates of trainee teachers, the quality and content of teaching in the teacher training colleges has remained the same. According to Bhalarusesa, Westbrook, and Lussier (2011), the teaching in teacher training colleges still relies on lecturing and memorisation. Thereafter, the student teachers transfer those approaches to practice teaching and, later, into schools as employed teachers.

Since 2005, the government of Tanzania has taken further initiatives to strengthen in-service training programmes by introducing teacher professional development programmes—seeking to strengthen the connection between teacher training colleges and primary schools. The initiatives work through decentralised education systems where district authorities, together with teacher resource centres (teacher training colleges, primary schools, and local communities), coordinate teachers' learning activities aimed at improving the quality of teaching and learning. These efforts provide a possibility for teachers to reflect upon the assumptions, concepts, and belief systems that guide teaching practice.

However, according to Mosha (2018), hierarchical power systems characterising educational governance that are ingrained into the culture of Tanzanian political governance are still the main challenge in terms of achieving interactive teacher development systems. In the same way, the relationship between the Ministry of Education, the district authorities, universities, teacher training colleges, primary schools, and the local communities seems to build on the mentality of hierarchical power relations (Hardman et al., 2015; Mosha, 2018). In that context, decisions related to the mobilisation and dissemination of resources needed to transform educational systems are normally top down. Hierarchical power relations might demotivate and thus negatively affect the sustainability of interactive teacher development systems.

Considering the foundation of, and experiences with, Tanzanian teacher education and Tanzanian educational policy and its relevant research on EE, we regard the government initiatives as an appropriate point of departure for strengthening EE in present-day Tanzania (Hardman et al., 2015; URT, 2010). The vitalisation and achievement of democratic relations and decision-making systems among and between the stakeholders on different levels is a possible gateway for initialising cooperative and participatory approaches in teacher education for environmental sustainability.

The PAR project involved connecting a teacher training college with the environmental realities of primary schools where the student teachers practised their teaching. The intention was to create best examples of teaching practice that promote connections between teacher training colleges and the realities of teaching practice in primary schools, using student teachers as agents of change. Stenhouse (1975) commended this approach. According to Sterling (2010), initialising EE in a teacher training college can facilitate the transfer of knowledge, and therefore enable systemic change and environmental sustainability through the transferring of best practices by many educational professionals. Nevertheless, knowing that district authorities might remove teachers and headmasters from the schools, and wondering about the will to continue the work in the teacher colleges, we wanted to find out what had happened to established EE initiatives. We formulated two research questions:

- To what degree do the democratic processes in the PAR project enable the tutors, teachers, local community members to continue developing EE while simultaneously addressing the environmental challenges?
- In what ways do the power relations influence the further development of EE?

We address these questions in this paper. However, first we look into some theoretical perspectives on power issues relevant to the Tanzanian context. Based on a model of the social distribution of power developed by Bourdieu (1977; see Figure 1 below), we developed a contextualised theoretical model on power distribution and societal consequences (Table 1) that inspired our analyses of the follow-up study.

Theoretical Perspectives: Hierarchical Power and Democracy

Our main theoretical perspective on societal power structures and on the maintenance and functioning of such structures is informed by Bourdieu's (1986) theory, which connects societal power structures with cultural practices. In addition, we use Dewey's (1916, 1938) perspectives on democracy and experiential education and Freire's (1970) perspectives on conscientisation to discuss the potential influence on existing power structures through strengthening democratic processes.

Bourdieu (1989) suggested that the legitimacy of hierarchical power relations demands the existence of a societal doxa that often consists of an undisputable socially constructed worldview, and of

uncontested and institutionalised social and cultural practices. Doxa appears to us as the unchangeable natural order of a society in accordance with its given rules, procedures, and the power of the authorities (Bourdieu, 1989). We show this structure in Figure 1. On the other hand, democratic power relations represent discourses and a dynamic worldview in terms of the tentative state of the changes that move us toward constructing a better world.

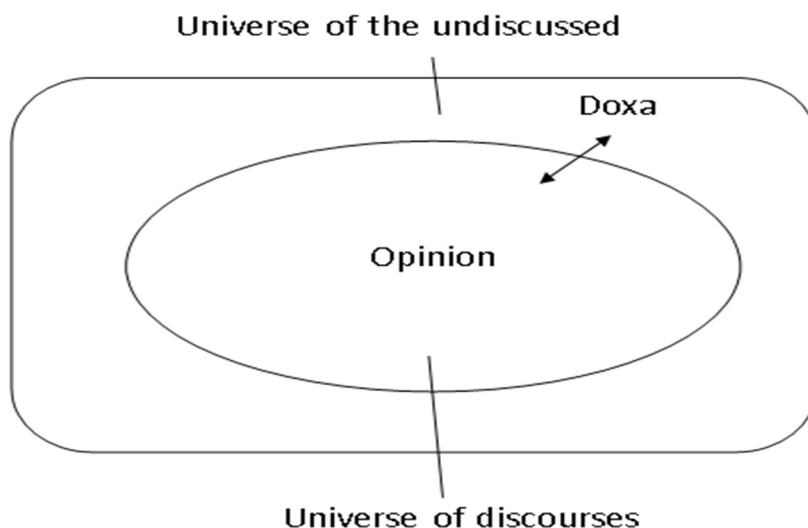


Figure 1: A Simplified Model of the Relation Between Doxa and Opinion (developed from Bourdieu, 1977)

The two major types of power relations—namely, hierarchical power relations and democratic power relations—might exist simultaneously and side by side in the same society (Quicke, 1995). While hierarchical power relations espouse centralised, bureaucratic, and top-down decision making to achieve efficiency and cultural stability, democratic power relations espouse distributed power through majority decision making in order to achieve autonomy, self-control, distributed power relations, and cultural progression (Quicke, 1995).

According to Bourdieu (1986), proponents of hierarchical power relations and structure, and proponents of democracy and discourse tend to compete for domination of the social practices. Each legitimises its position through the acquisition of relevant capital and thus gains the power to squeeze, push, and establish said social practices. The two-sided arrow between doxa and opinion in Figure 1 illustrates the continuous, ongoing societal dispute and power struggle revolving around which themes belong to the natural order, and which themes are necessary to debate and negotiate. When a hierarchical power structure dominates, as indicated in Table 1 with the black arrow pointing downwards, emotional reactions characterised by disempowerment seem to prevail.

Table 1: Power Transaction Between Hierarchical and Democratic Power Systems

<p>Hierarchical power systems</p> <p>Top-down system for decisions</p> <p>Supremacy of the central government</p> <p>Coercion, obeying, conformity, stable culture and rules, efficiency, control, competition, and individualism</p>	<p>Democratic power systems</p> <p>Distributed power through majority decisions</p> <p>Negotiable distribution of power to decide between municipalities, regional, and central authorities</p> <p>Negotiation, discussion, ability to change through majority decisions, autonomy, cooperation, collaboration, group activities</p>
<p>Prevailing emotions when hierarchical power systems are dominant</p> <ul style="list-style-type: none"> • Apathy • Aggression • Othering • Resistance • Withdrawal 	<p>Anticipated development of emotions when democratic power systems are dominant</p> <ul style="list-style-type: none"> • Feeling competent • Experiencing relatedness • Increased community resilience

The question is: “What might happen in the right column when the right arrow becomes stronger?” This paper discusses the potential of the democratic organisation of EE in teacher training colleges, in primary schools, and in their surrounding local communities. The authors have documented that reliable leaders who facilitate democratic decisions can motivate both student teachers to include EE in their practice schools and members of local communities to implement environmentally friendly practices (Kalungwizi, Gjøtterud, Krogh, Mattee, & Ahmad, 2017). Hierarchical power is an obvious part of the current hierarchical leadership in Tanzania; but even within this power structure, the facilitators might realise democratic processes within a framework of confidence and make room for self-determination among the participants. When the arrow turns rightwards, participants’ self-esteem, self-efficacy, and united problem-solving efforts and capacities seem to increase. We return to the qualities of the right column in Table 1 later in this discussion.

In our opinion, habitus cannot totally determine a person’s worldview and actions—even in a system characterised by hierarchical power. Situated freedom (Merleau-Ponty, 1981) is a possibility, even in harsh environments. The facilitation of democratic processes might also enact itself as a gateway through which we move habitus, adding democratic social and cultural capital. Theoretically, added social and cultural capital are transferable to symbolic capital in the educational field. Bourdieu (1986, p. 257) defined symbolic capital as “the form that the various species of capital assume when they are perceived and recognised as legitimate.” The access to, and disposition of, symbolic capital gives access to power. Still, the movement from left to right in Table 1 seems to be a challenge in terms of the Tanzanian context.

The Tanzanian composite power system is rooted in the historical context and development of the country, from the traditional governance of chiefs, through to colonial rule, and into Tanzanian independence under cooperative socialism and, later, under liberal democracy (Nkulu, 2005; Quicke, 1995). Julius Nyerere, the first president and a symbolic icon of the social practices of Tanzania, played his role by using both traditional tribal chieftainship and the proposing of democracy and cooperative socialism (Nkulu, 2005; Swantz, 2001). During the establishment of *Ujamaa* [family] villages, Nyerere proposed democracy, the principles of the extended family, and equal rights for Tanzanian citizens.

Nyerere's Tanzania became an ideal location for the extension of democratic principles to other African countries, including Mozambique, Botswana, Zimbabwe, South Africa, and Angola—nations where Nyerere also assisted in the gaining of their independence and the establishment of democratic states. Both in the Arusha Declaration and throughout his presidency, Nyerere maintained that anyone who did not agree on the main democratic principles in the Declaration risked exclusion from the party. The government forced many Tanzanian citizens to leave their native villages and move into the new villages that the government created (Loiske, 1995). Several pastoralist tribes lost access to their land and water resources. For example, the Barbayiig who used the Basuto Plains before the establishment of huge state wheat farms, and the Parakuyo Masai in Bagamoyo who were banished due to the establishment of cattle farms (Swantz, 2001). The replacement policy created land use conflicts between pastoralists and agriculturalists and has contributed to environmental degradation. In this paper, we do not focus on these conflicts and the subsequent environmental challenges but use the examples to illustrate how Nyerere's Tanzania operated two different power systems simultaneously; the hierarchical and democratic power systems worked in unison.

The composite power system seems to be prevalent in the organisation of Tanzanian education. Decisions regarding the allocation of educational resources are hierarchically organised. The government recruits teachers, and district authorities distribute the recruited teachers to the large number of primary and secondary schools across the region. In a similar way, centralised top-down organisation characterises the distribution of books and other teaching and learning materials, curriculum development, the examination system, quality assurance, and the supervision of teachers as well as the quality of their teaching.

Initially, teachers are deployed to a teaching position by the government and district authorities, usually at a school far away from their place of residence. After a few years, the government might move a teacher to another region. Therefore, teachers and their pupils can only form temporary and loose connections with their local community and teachers can easily become foreigners in their working environment—they often move away from, or quit, their teaching positions and, ultimately, abandon the profession (Mkumbo, 2012). There is limited room for questioning the existing EE rules including the curriculum development rules, examination rules, the allocation and distribution of teachers and other resources, the determination of the quality of teaching, and the power relations among institutions.

Beyond the framework of resource allocation, curriculum, and examination systems, communities hold some responsibility, along with the institutions, for democratic decision making that is related to education in the local primary and secondary schools. Parent and community representation through school boards and school committees can influence certain decisions, and support the schools where possible when they lack material resources, for example, through local school feeding programmes (Jäckle, 2016).

Considering the remaining tradition of self-reliance in Tanzanian education, which relates to experiential learning and conscientisation (Dewey, 1938; Freire, 1970), we suggest two interdependent

gateways to extend and expand the student teachers' and, in the next phase, the local inhabitants' situated freedom to develop EE in the framework of the Tanzanian hierarchical power structure.

The first gateway is to increase the local knowledge of environmental challenges and their consequences and, in addition, to suggest, discuss, try out, and evaluate the concrete efforts of local management in terms of the presented challenges. Dewey (1916) emphasised the educative significance of concrete management of experienced challenges, and Freire (1970) stressed how a raised consciousness in terms of societal and material living conditions and other common challenges in a group can enable united efforts directed toward realising changes. This leads us to the second gateway that we suggest, and which is illustrated by two Tanzanian sayings: *Mtu ni Watu* [A human being is a part of humanity] and *Umoja ni nguvu* [In union there is strength]. Through democratic processes, it is indeed possible to unify and coordinate environmentally friendly activities in local communities.

Cultivating an awareness of the power structures, and strengthening members' trust and confidence by demonstrating significant results from EE seems to be a stepping-stone in terms of addressing sustainable environmental activities. Given the challenges mentioned above, we think action learning and PAR is a good way to move forward, although there are some challenges that we also need to be aware of, as we discuss later in this paper. In the next part of the paper, we briefly recount the major features of the PAR project. The main issue is to explore to what degree the teacher training college, schools, and local communities sustained the established participative approach to EE one year after the researcher left the project, and what factors seemed to challenge sustained EE practice. But, first, we will discuss why we chose to base the PAR project in teacher education.

The Participatory Action Research Project: Content and Findings in a Nutshell

The PAR project initially focused on sharing relevant knowledge and skills about tree planting as part of the EE programme at Ilonga Teacher College and the surrounding primary schools and villages. In collaboration with pupils, the teachers and pupils' parents at local primary schools and other local stakeholders, student teachers, their tutors, and the researchers mapped environmental resources and challenges in the chosen area. Thereafter, the researchers organised and facilitated focus-group discussions and a workshop discussing the challenges and options at hand for the successful realisation of the project. Through the discussions, the participants developed a plan for implementing the EE project.

In collaboration with the first author, tutors and local experts, such as a gardeners and extension officers, taught the school and college leaders and other engaged local stakeholders strategies for the management of the environmental challenges they faced, and, in addition, how to promote further learning and the development of functional skills as a way to reinforce local capacities. The strategies aimed at facilitating the participants' competences to manage and conserve the soil by planting trees and making compost manure, and at using the activities as an arena for teaching and learning. In the first phase of the project, the student teachers also received training in participatory teaching methods connected to the practical EE activities. Through the PAR process, in their practice period in the schools close to the college, they learned by planning, acting, and reflecting together in action learning cycles. In addition, they learned how to involve pupils, teachers, and community members in EE. We expected the student teachers to realise the teaching approaches during their practice teaching, using tree planting as the teaching and learning arena, and engaging local communities to address the environmental challenges that mattered in those areas. During the initial phase of the project, the researchers found that the local participants' trust in the project leaders, combined with their experience of the feasibility of practical activities, both motivated engagement in the collaborative planning and inspired learning through initial actions.

Thereafter, the student teachers planned EE projects and implemented them in nine primary schools in seven districts across Tanzania as a part of their second practice period. The student teachers involved members of the local communities in mapping environmental challenges and mobilising needed resources to address the challenges. Afterwards, they discussed the outcome of the practice with teachers, pupils, and parents in order to evaluate their own practice and to think about how to improve the teaching of environmental topics, thus transferring democratic processes into other communities.

The initial results indicated that the student teachers had committed to environmentally friendly practices and democratic principles. They were able to facilitate environmental care in the local communities and surrounding practice teaching schools, and stimulate discussions with school and college leaders. In one of the schools, the student teachers and pupils supported the local community members in reflecting on their environmental problems. The discussions resulted in the establishment of home gardens among interested parents, teachers, and tutors. In another school, the student teachers facilitated community members to discuss a conflict in their village between farmers, pastoralists, and school leaders. Through their joint efforts, they decided to plant fodder for their animals as a means to reduce conflicts resulting from lost pastures due to drought in the area. The community members enjoyed the activities and volunteered to fence the school garden in return. Dialogue and mutual problem solving reduced the level of hostility between the involved stakeholders and (probably) founded a future sense of democratic cooperation, and enhanced community resilience.

During the two years of project implementation, democratic relationships seemed to emerge among local actors and education institutions. Through their different roles in the implementation of EE, the student teachers seemed to build their self-esteem and sense of autonomy. The democratic processes improved the local communities' ability to manage environmental challenges, even from within the hierarchical Tanzanian power structure. This improvement reduced local dependence on limited and unreliable external resources, and yet, the sustainability of the process remained a major concern because the influence of central government authorities still determined most of the decisions.

Follow-Up Study of the Environmental Education Activities

In order to explore to what extent the beginning of the democratic process had prevailed, the first author undertook a follow-up study one year after ending the PAR project described briefly above. The teacher training college and the three surrounding primary schools in the PAR project took part in the follow-up study. The three primary schools had continued to receive student teachers from the college. From each of the three schools, we selected the headmaster and three active teachers as participants, and from the teacher training college, the dean and three tutors. However, we did not follow up the practice schools around Tanzania where the student teachers had their second practice period.

We collected data via focus-group discussions with teachers and the environmental committees at the primary schools, interviews with the deans, the administrators of the teacher training college, the village leaders, the primary school headmasters, and the gardener, and, finally, through nonparticipant observations to get information about the status of the established project activities. The focus groups emphasised the key indicators of the project's sustainability, including the ability to mobilise resources and, hence, build social and symbolic capital. Therefore, the focus groups considered the challenges around sustaining environmental activities and the involvement of the participants in the management of the challenges, and the different roles played by different local actors. Among others, the interviews focused on the availability of the resources for sustaining EE activities in schools and in the teacher training college. The observation focused on the established EE activities such as the continuation of tree planting and gardening activities. The first author took notes of the observed activities and

recorded the discussions and interviews. The observation checklist of activities started during the PAR provided the means to judge whether the EE activities had been continued or not.

The first author took notes and then transcribed all the audio recordings, organising them into themes and reflecting on our research questions (Miles & Huberman, 1998). The analysis of the data collected through focus-group discussions involved four steps: transcription, summarisation, coding, and categorisation (Miles & Huberman, 1998). We generated the categories through an analysis of the focus-group discussions (frequency in parentheses): “difficult to engage with new leaders (8),” “not involved in decision to transfer teachers (5),” and “unpredictability of resources (6).” The categories related to strategies in addressing hierarchical power structures included “unit of teachers (7),” “self-determination (6),” “commitment (3),” and “recruiting new participants (9).” The analysis of the interviews generated categories related to strategies to address resource constraints (frequency in parentheses): “cooperation with local community members (9),” “discussing the challenges with local authorities (6),” and “using available resources wisely (4).” The analysis of the observation logs generated categories of EE activities that were continued or improved after the researcher had left the project areas. Further analysis collapsed the categories into themes, which we discussed with the research questions.

Sustained Environmental Education Activities and the Challenges Encountered

We present here, the results of the democratic process based on the findings from the follow-up study. By synthesising the categories, we have organised the findings into three themes. First, we describe the status of the EE activities in the project area. Second, we explore how the previous participants in the PAR project continued a process of shared power and influence, sustaining the democratic power structures supporting the maintenance of the EE activities. Third, we elaborate on the challenges to the sustained process of meaningful EE and the emerging principles required to sustain a democratic process. We close the section with reflection on the follow-up study.

Ongoing Environmental Education Activities

During the follow-up study, only one of the practice schools had continued to plant trees, whereas all continued to care for the trees that they had planted. Gardening predominated in all the sites that we visited, with vegetable cultivation as the dominant crop. The teachers, pupils, and the student teachers visiting the schools from the teacher training college (during practice teaching) conducted the gardening nearby, or in the tree plot established at the participating primary schools, to facilitate the simultaneous learning of tree care and gardening. Gardening generated raw produce for their own school lunches, which motivated the student teachers and pupils to further participate in the gardening activities and to take care of the planted trees. We also found new activities such as creating ornaments and plant pots for beautifying the school.

On all four sites (the practice teaching schools and the teacher training college), student teachers, together with tutors, teachers, and the pupils, had started to use animal manure and decomposed organic waste to fertilise the soil in their gardens. Soil fertilisation had become an important activity where they used their acquired knowledge to increase vegetable production. As a result, the community had become more self-reliant in terms of feeding its pupils.

In the schools we visited, gardening, tree care, and soil fertilisation had become major arenas for the teaching of environmental topics. The teaching had become oriented toward practical activities that addressed the community's needs. This change is contrary to the conventional teaching and learning

approaches of Tanzania, approaches that emphasise the passing of examinations only (O-saki & Agu, 2002), and yet it is in line with the curriculum.

The Democratic Organisation of Teaching and the Support for Environmental Conservation

The participants organised activities according to the democratic principles of power sharing and mutual support. The teacher training college had organised planning and reflection workshops with primary school teachers and local village leaders. The intention was to discuss the participatory supervision of the student teachers, and to explore how both the teachers and the local communities could contribute to the improvement of teacher education in the local teacher training college. Thus, the locals' participation continued to ensure access to local resources that aided the practical teaching of environmental topics, and led to enhanced student teacher experiences of teaching environmental topics. The local participation in itself gave a positive contribution to environmental sustainability in the local communities surrounding the schools and the teacher training college. The practice sessions enhanced the learning experiences among the student teachers. In return, both the student teachers and the pupils had been teaching tree planting and gardening in their communities, showing that they had acquired a sense of self-confidence, and a sense of responsibility and autonomy during their previous activities. In the pupils' homes (which the first author visited), the members who were trusted by the community reported that the pupils had become very supportive, especially in terms of helping to establish vegetable gardens and in helping to manage pests and diseases.

Further, the teachers and tutors reflected on the possibility of becoming learners themselves, given that one of them acknowledged that she had learned about tree planting in her school days; only after she had participated in the project, however, had she acquired the ability to do the gardening practically. This shows that the participants realised the power of working together and learning from each other (Gaventa & Cornwall, 2001).

The democratic organisation of EE learning seemed to be interesting to both teachers and pupils in the study area because it encouraged autonomy and supported academic learning in the classrooms—as one of the teachers said: “The pupils seem to feel freer in the classroom. Now, they perceive us as friends.”

Transfer of Teachers: Threatening the Process

The existing hierarchical power structure in Tanzania—such as the regular transfer of teachers and school headmasters by central government authorities—threatened the project. The transfer of teachers jeopardised the acquired knowledge and skills of both pupils and teachers, as well as the cultural capital necessary to sustain the development of EE. The district authorities had transferred most of the teachers who participated in the participatory project from the beginning until when the first author conducted the follow-up study. However, there were still a few teachers left to keep on teaching new participants. Even when the headmasters who had supported the process were removed, the teachers took responsibility. This is a point that we revisit in the discussion section.

Reflection on the Follow-Up Study

The local schools and their surrounding communities had largely sustained and partly expanded their EE activities. Still, no one had planted new trees, even where trees had died. Instead, they had started gardening and facilitating the cultivation of vegetables, generating quick results and raw produce for school lunches. Despite the significant transfer of teachers, teaching had become more participatory both in the teacher training college and in the participating schools; the planning and implementation of EE activities continued through the active participation of pupils and student teachers. The pupils decided on the outdoor activities they wanted to implement and discussed their ideas with local

community members in their student clubs, which met regularly. The pastoral communities participated in the activities, contributing materials and labour to the process. Both local leaders and community members regarded the process highly.

Discussion

The discussion departs from, and connects with, the two research questions: “To what degree do the democratic processes in the PAR project enable the tutors, teachers, and local community members to continue developing EE while simultaneously addressing the environmental challenges?” “In what ways do the power relations influence the further development of EE?” Regarding the first research question, we have shown above that the democratic processes in the PAR project enabled the tutors, teachers, and local community to continue developing EE in ways that addressed their local environmental challenges. The PAR project had lasting effects one year after the researcher had left the area. In this discussion, we focus on our second research question concerning the influence of the power relations in the further development of EE. We discuss the potential for PAR to build the participants’ capacity such that they become less vulnerable to hierarchical power structures in the educational system.

In line with our contextualised theoretical model, our findings show the potential of PAR and action learning strategies in terms of sustaining the democratic teaching of environmental topics in the context of hierarchical structures. Although the authorities in charge of the primary schools and teacher training college regularly removed headmasters and college administrators, and thus created weakened access to key resources and decision-making members of their faculties, the teachers were not demotivated. Instead, they encouraged new teachers to join the process of change. These teachers intended to spread the teaching and learning strategies to more teachers in neighbouring schools to expand their newly created learning community. Teachers and local communities alike demonstrated a growing ability to improve EE by engaging the community members and sharing their knowledge and skills with pupils and student teachers. This ability is promising in terms of the communities’ development of resilience against not only environmental degradation but also against conflicts between groups within the community, for example, between agriculturalists and pastoralists. Thus, the transition to democratic relations in EE seems to rely on an awareness of local environmental conditions, dynamic teacher identities, a sense of solidarity, and committed local leaders.

In addition, awareness of the power structures of educational governance seems to have established cultural capital for sustaining democratic power relations (Bourdieu, 1986; Chevalier & Buckles, 2013). In line with Freire (1970), Ahmad (2014), and Jäckle (2016), the findings suggest that increased awareness of the dominant power structures of the EE practice and educational practice can promote and stimulate community members’ commitment to democratic processes that improve learning situations. The awareness stimulates self-determination, commitment, and the willingness to try new strategies, both individually and in collaboration, and can even foster the formation of dynamic teacher and teacher staff identities.

According to Wenger (1998), knowledge based on real-life experiences shapes human identity through the definition and redefinition of the member’s roles in the community of practice. The practical EE knowledge realised in democratic PAR activities engaged the student teachers, as well as other teachers, and seemed to influence the development of their teacher identity. Teaching became a dynamic process that also involved learning. One of the tutors commented on this transformation, saying she had learnt about tree planting in her school years, but that it was during this project that she learned how to do it practically at home. The project gave her opportunities to learn from experienced student teachers. Such an identity transformation is important in the power-sharing process and, thus, in sustaining democratic relations. It can become a source of solidarity for pupils,

community members, and teachers alike, who connect with each other through the fulfilment of personal as well as communal needs (Zuber-Skerritt, 2015).

Nyerere (1967), Noffke (1997), and Nkulu (2005) discussed the importance of a sense of collective solidarity for the realisation of collective actions among marginalised communities who want to use research to realise social change. In this study, collective actions and solidarity seemed to promote self-esteem among the local inhabitants, which encouraged them to continue the struggle, even under harsh conditions with limited resources and unstable local expertise. A collective solidarity composed of respect and responsibility toward others seems to be important to achieve environmental sustainability (Shumba, 2011). Yet, the solidarity is influenced by, and dependent upon, committed local leaders.

As Nyerere (1967) emphasised, qualified local leadership can be a key for the achievement of social transformation. In rural Tanzania, chieftainship means that encouragement from positioned and valued members of the community can be the main source of motivation. In this study, local leaders and school committees coordinated activities and encouraged the participation of parents in the sessions. In addition, the contributions of the local gardeners and extension officers seemed to be highly important. Together, the coordination done by local leaders and the instruction by advisors with relevant skills seemed to motivate local participants. The local leaders' willingness to share their authority with the teachers practicing PAR was a gateway to a more democratic structure that involved active teaching of environmental topics and active human agency (Bandura, 1986). In fear of losing their power to the other teachers, a few headmasters, to a lesser degree, were willing to share their authority. In this way, they seemed to slide back into *doxa* (see Figure 1). This kind of relationship reduced the flexibility of the school systems, rendering it difficult for these schools to integrate the changes into their learning methods.

The discussion's nuances demonstrate the earlier described tensions between a self-efficient local community and the framework of top-down hierarchical power relations from the government down to local communities and schools. Still, we have shown that within hierarchical power structures it seems possible to create arenas for the development of democratic power relations. The democratic organisation of EE in outdoor activities at schools—like tree planting, based on action learning in a PAR project—have the potential to influence the rigid top-down teaching regime in the classrooms in a democratic way. In accordance with cooperative action research, collaboration between different stakeholders, and the distribution of power from the experts to the locals—and from the leaders to other citizens—seems to motivate both individual and collective actions on a local level. To a degree, a lack of material resources and access to decision-making members of the faculty can be counteracted by supplying cultural and social capital, satisfying the conditions for releasing inner motivations: self-determination, competence, and attachment or belonging, as demonstrated in Figure 1 and Table 1.

The critical environmental situation in Tanzania calls for effective collaboration between teacher education, primary schools, local communities, teacher resource centres, and local government authorities in order to create EE that can enable people to find new solutions in order to survive. We have argued that teacher education is a key to the transformation of teaching in primary schools. The student teachers' role as practitioners gives them the opportunity to bridge teacher education and local EE and environmentally friendly practices. A level of active participation from the abovementioned institutions can address challenges such as limited resources, which are a norm in many teacher training colleges in Tanzania (URT, 2001). Hence, a balanced power relationship between teacher training colleges, primary schools, and district authorities might be key in terms of developing the quality of teacher training programmes and the implementation of the EE curriculum, which often

demand active teaching and experience in fieldwork. We have argued that PAR in teacher education is a way to achieve such a power balance.

Concluding Reflections and Recommendations

We have shown that by using action learning and action research as an approach to EE, it was possible to foster democratic practices within the frame of hierarchical structures. The results from our study suggest that teacher education might promote democratic processes in schools when local leaders are engaged in the process from the planning stage. We have shown an example of how the integration of PAR and action learning can be possible in the context of Tanzanian teacher education and schools and, given that the situation is similar in a range of countries, we believe the results are also useful in other contexts.

Based on the discussion in this paper, we suggest that there is a need for teaching PAR and action learning during the education of teachers as a means to move power relations from hierarchical to democratic structures. PAR and action learning approaches provided us with the possibility to mobilise resources in local communities in order to address the sustainability of management of the environmental problems faced in this project. We therefore recommend the integration of PAR and action learning in the teacher education curriculum.

Further, we recommend holistic and system-oriented EE, addressing the leadership of teaching processes. It seems crucial that leaders at different levels of the educational system should own the process and encourage teachers in order to sustain the changes that are made. Preservice training is not enough to initialise such a holistic change in EE when there are so many teachers who are not educated in holistic ways of EE teaching. There is a continual need for in-service training to equip teachers with the knowledge and skills to facilitate such processes of change. And, EE learning is a dynamic process, which faces continuous challenges because the environmental challenges themselves are changing. Follow-up education and support for the new teachers who address new challenges in local communities and the teaching system are crucial.

This project had very little funding. The local leaders and community members supported the maintenance of EE activities in their schools and in their local communities because of the small incomes that were generated from selling vegetables and seedlings—these were some of the immediate gains from engaging in EE activities. We have shown that the participants were motivated to achieve a functioning democratic process that connected them with the fulfilment of their immediate needs. We therefore recommend further studies that emphasise EE to include more transformative changes alongside the formation of new and progressive values.

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