Contextualising Formal Education for Improved Relevance: A case from the Rufiji wetlands, Tanzania

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Abstract

The aim of this action research case study was to engage a community of villagers, teachers, students and district officers in a participatory process to adapt a module of a school curriculum to the local context, and teach it in order to describe one way in which contextualisation, using local and indigenous knowledge and active discovery teaching-learning processes, can be done. The major research question was: Does integrating local environmental cultural knowledge into formal schooling contribute to curriculum relevance? If so, in what way?

This paper summarises the background and context of the research, the motivation and the theoretical basis for the work, the methodology and methods, and the action research process itself. The results are interpreted and discussed in light of current theoretical perspectives on education and environmental education. The main findings within the case are that contextualisation improved relevance of education and thus its quality by:

- *Breaking through traditional frames/barriers between teachers and students, students and elders and community and teachers.*
- *Allowing formal education to take place outside of the school.*
- *Necessitating a change in pedagogy to more learner-centred discovery methods.*
- *Allowing indigenous knowledge to come into the classroom.*
- *Stimulating creativity and increased confidence.*
- *Bringing local socio-political environmental issues into the classroom.*

Background

Children in the Rufiji wetland of Tanzania, even when they manage to get formal schooling, have difficulty passing the final (Standard VII) exams (Hogan, 2006). There are many reasons for this, which persist nationally and negatively affect the quality of education in primary schools; including scarcity of qualified teachers, teaching-learning processes, materials and equipment, poor access to wider reading resources, low support capacity in the home (including parent illiteracy), nutritional deficits and resource limitations (Mrutu, Ponera & Nkumbi, 2005; Rajani *et al.*, 2001). The waiving of primary education fees in 2002 resulted in an increase of 1.6 million children enrolling in schools, thus putting increased stress on the system and making it difficult to maintain even the poor quality of education (Buston, 2003). Half of Tanzanian schoolchildren have no help at home for their studies and the majority have no access to

reading materials (Mrutu *et al.*, 2005). This deprives them of opportunities for making their own investigations and makes them highly dependent on teachers as their source of knowledge.

The national education service delivery problems are exacerbated in the Rufiji River floodplain and delta because of the dynamic physical environment of its wetland, which constrains land travel and communications and discourages government personnel from persevering there. Schoolgoers of the zone in which Rufiji lies (Eastern Zone) are the most disadvantaged nationally with regard to the availability of reading materials at home and the region also has a relatively low percentage (60%) of pupils who get three meals per day (Mrutu *et al.*, 2005). These factors influence the effectiveness of schooling. National and district education departments are trying to redress the situation, but within a standardised formal curriculum and a pedagogy not applied to the extremes of the environment or the natural-resource dependent lifestyle of wetland children.

Traditional African pedagogies and educational philosophies which were communal and strongly embedded in the community are not integrated widely in the Tanzanian formal education system The aims of the present educational system in Tanzania provide for a re-appropriation of indigenous knowledge and ways of knowing by including '… the promotion and acquisition of culture, good customs and traditions of peoples of Tanzania' (URT MoEC, 1996:iii). Some use is made of stories, puzzles, proverbs and word games, but these are confined to the teaching of culture. School is separate from home and home education is not valued by the formal government educational system. Mrutu *et al.* (2005:124) report that teachers did not think it important for pupils to have reading materials at home, indicating that '… teachers regarded the role of the home in promoting reading as very minor or even negligible'. Although communities are involved in school management in Tanzania, they are usually excluded from decisions regarding teaching and learning.

The Continuing Basic Education in Tanzania (COBET) (MEMKWA is the Swahili acronym for this programme) system of schooling demonstrates a shift by the Ministry of Education and Culture (MoEC) towards a more active learner-centred and learned-led education methodology. COBET is a crash programme to compensate for the loss of education by 1.6 million children over ten years of age who remained out of school in the early 2000s (TIE, 2005:vii) and COBET teachers are referred to as facilitators. One of its two main functions is: '… ensuring delivery of a relevant and competence-based courses of study through a well-designed curriculum, delivered through interactive child-friendly and participatory approaches' (TIE, 2005:viii).

COBET facilitators receive training (albeit for only 12 days) in participatory methods and are encouraged to use demonstration, discussion, role-play, songs, study visits, guest speakers and small group activity amongst their teaching methods (URT MoEC, 2005); thus opening opportunities for learners to be discoverers of knowledge through their own research. Facilitators are expected to be 'loving and caring' and are advised that corporal punishment are not solutions for misbehaviour as these may be the reason for dropping out of school in the first place. The COBET/MEMKWA programme addresses the relationship between the school, parents and the surrounding community. The roles of the parents and community is to provide facilities (e.g. classroom furniture and security of assets) and to motivate students to go

to school and study. There is no consideration of a parental role or community role in lesson planning or curriculum decisions.

This action research case study tested one module in the COBET curriculum with one COBET class in one school, Nyamakurukuru, in Rufiji District. The aim was to engage a community of villagers, teachers, students and district officers in a participatory process to adapt a module of a school curriculum to the local context, and teach it in order to describe one way in which contextualisation, using local and indigenous knowledge and active discovery teaching-learning processes, can be done.

The major research question under examination for this specific case was: Does integrating local environmental cultural knowledge into formal schooling contribute to curriculum relevance? If so, in what way?

The Research Site: Nyamakurukuru School and Community

A school was built at Nyamakurukuru after independence in 1969, but in 1974 when Ujamaa villagisation was enforced the population was forced to migrate and the schoolhouse was abandoned. In 2000 it was recognised that most of the adult population in the sub-village were unable to read or write. This appalled the sub-village chairperson, who in September 2003 opened a school in a shack which 120 children attended. At the end of 2004 the Education Ministry, under the COBET scheme, trained two voluntary facilitators for 12 days and one professional schoolteacher was appointed as school principal.

At the time of writing, the population of the sub-village was 776 (367 female and 413 male) and was mainly comprised of members from the waNdengereko tribe, but also waNgindo, waPogoro, waSukuma and waBarbaig. There were 139 children registered at the school. Those who completed three years of COBET took Standard IV exams and have now been integrated into mainstream primary education in a Standard V class. The classes which currently run are Standard I, Standard II, Standard V and a Cohort I Year 3 COBET class. There are two classrooms and three active teachers. One teachers' house has been built and this is shared between two teachers (one of whom is accompanied by his family).

The school is accessible by two routes from Utete, but neither is reliable in the wet season. The school, situated in woodland of mixed Miombo and Lowland Coastal forest vegetation, is about 100 metres from the wetland between Lake Lugongwe and the Lug'onya and Rufiji rivers. A well, for domestic water supply, has been dug in the wetland near Lug'onya River. Bushbabies, bats, owls, jackals, hyenas and elephants can be heard at night. There are crocodiles and hippopotami in the rivers. Small antelope, and probably other species, are hunted for meat. Low mesh sizes are used for fishing very small fish.

Theoretical Perspectives on Contextualisation and Relevance

Macro and micro studies of the meaning of quality education are underway and have found relevance among the 'five dimensions of quality that are recurring themes of debate on quality' (Barrett *et al.*, 2006:2). These are effectiveness, efficiency, equality, relevance and sustainability.

By contextualisation, I refer to changes/adjustments in the area which Bernstein (1990) terms the 'primary contextualising context' where local pedagogic discourse (LPD) can take place. This is the interactive area between the three learning environments which schoolchildren inhabit – the home, the community and the school. Community involvement in children's education is seen by educationalists as a valuable contribution to the relevance of education in the lives of its learners. Moll and Greenberg (1990:345-346), amongst others, urged that meaningful connections be created between academic and social life through the concrete learning activities of the students.

'Classification' during the process of contextualisation refers to 'what' will be transmitted in terms of 'categories, contents and relationships' while 'framing' refers to 'how' the knowledge will be transmitted (Bernstein, 1990:195). A highly framed system is characterised by the distinct hierarchical positions of students to teachers, teachers to education officers and curriculum developers. In a strongly classified and framed educational system such as that of Tanzania's formal education system (except for pilot sub-systems such as COBET), there is limited latitude for the teachers ('transmitters'), who are low on the hierarchy of power, to adapt the curriculum to local contexts. Taylor and Mulhall (2001:143-144) found that 'the rigidity of primary school curricula seemed to discourage teachers from moving beyond the boundaries of the subject area'. Bernstein (1990) referred to the clear separation of subjects from each other, with little recognition of overlaps or cross-cutting concepts, as strong horizontal knowledge classification. An over-rigid curriculum is identified as a constraint to contextualisation and presents a challenge to environmental educators.

In Zimbabwe, Chikunda (2007:168) recommends that 'improvement of basic education and re-orienting existing education should aim at developing knowledge and skills for citizens to jointly identify their problems and act on them in a sustainable manner'. This requires the freedom to teach holistically across subject divisions and proposes a situation whereby the context is defining the curriculum. Taylor and Mulhall (2001), following research in four countries (including Tanzania), and Vandenbosch (2007) show positive results from their case studies of contextualisation at school-home-community level. Vandenbosch gives examples from western Kenya and the Philippines which show how the content and the teaching-learning processes, when adapted to the local environment, natural resources or agricultural surroundings, improve the quality and relevance of education, while 'at the same time making relevant knowledge and skills available to communities …[and] … contributing to development' (2007:5-6, 8). Bridging the relationship between the school, the home and the community – or weakening the framing which separates school from the context of its operation – is a focus of both sets of studies.

The 'indigenous and local knowledge' versus 'Western scientific knowledge' dialectic is one of the many dialectics created by scholars over several centuries. Hogan (2007) discusses the origins of this and some other relevant dialectics about knowledge (sacred vs profane, book knowledge vs unorganised knowledge) and has learnt that such dialectics which set one type of knowledge against another are deliberate constructs or, in the words of Latour, are '*made*' (1999:267, italics in original). Regan terms the use of 'Western' vs 'non-Western' as a misleading dichotomy (2000). For convenience, I call the two knowledges 'indigenous knowledge' and

'Western scientific knowledge', though I, like other contemporary scholars such as Shava (2005), believe that neither are purely what these terms suggest and both have been influenced by each other and by a multiplicity of non-Western sources of knowledge.

Currently, the dominant thrust of the formal educational and knowledge systems in Tanzania, like many countries in Africa, follows cultures other than African cultures (Buchert, 1994; Brock-Utne, 2002; Hountondji, 1997; Odora-Hoppers, 2002; Reagan, 2000) and follows a Western paradigm (Millar *et al.*, 2006) which carries with it the values of a linear, neo-liberal, materialistic society that measures success in terms of quantity of material acquisition and level of academic qualification. Bernstein (1990:205) argues that 'the link between power, knowledge and consciousness is established by the pedagogic device', which provides the 'internal grammar of symbolic control … or socialisation' which forms the basis of modern education systems. Cornbleth (1990:185) observes: 'Curriculum knowledge is largely mainstream, the knowledge deemed important by dominant groups ...' and that minority and marginalised groups must advocate to have their histories, cultures and perspectives included as 'legitimate knowledge'. In Africa, and elsewhere, indigenous and local knowledge has been devalued by historical events associated with colonial intrusion, modernisation and, more recently, neo-liberalism and globalisation. It is acknowledged that, as it penetrated the world, the European pedagogic device established a clear boundary between mental and manual practice; that is, displayed a strong horizontal insulation between the teaching of academic subjects and practical skills (Bernstein, 1990). Indigenous and local knowledge encompass both mental and manual competencies.

In 1998, appalled at the poor quality of education in Tanzania in the 1990s and keenly aware of globalisation, Dr Julius Nyerere emphasised the need for relevant education, stating: 'We must educate our young people for the life which they are going to live in Tanzania [in their] corner of the Global Village [which is] rural Tanzania [or the] informal sector of urban Tanzania' (Lema *et al.*, 2004:163). According to UNESCO (2006:13) 'education based on local culture and contextual needs has been neglected in Africa'. Seventy-six indigenous and academic delegates, including Tanzanians, in a 2005 conference in Ghana suggested a new type of scholarship 'that combines indigenous knowledge with external knowledge at a collegial level' (Millar *et al.*, 2006:168). Their proposed steps towards achievement of this new type of scholarship include the integration of local experts into formal systems of knowledge and the inclusion of traditional knowledge, ways of knowing and African sciences in primary and secondary school formal curricula and pedagogies. However, the limited research done so far on the contextualisation process means that there is a limited understanding of it and therefore definitive recommendations about it are not yet possible. The Nyamakurukuru case study is intended to contribute to the understanding of contextualisation in practice, in a move towards a vision of *education in the wetlands and wetlands in the education* providing contextually relevant education for a sustainable future.

Methodology of the Process

This interpretive study had as its central endeavour 'to understand the subjective world of the human experience' (Cohen, Manion & Morrison, 2003:22). Through its interest in power

relationships, the study could be described as having a critical knowledge interest, but given its strong interest in practical changes *in situ*, the primary knowledge interest in this study could be categorised as a practical knowledge interest because its underlying assumption is that if a better understanding of their situation can be reached, then people will be able to take practical actions within it (Janse van Rensburg, 2001). I wanted to report on the 'complex dynamic and unfolding interactions of events, human relationships and other factors in a unique instance' (Cohen *et al.*, 2003:181), and therefore chose a case study methodology.

It was intended that theoretical insights would be gained which would inform others and might suggest possibilities without any certainty of what might happen in a similar case elsewhere. Bassey (1999:58) refers to such emerging theories as 'fuzzy propositions' which result from 'cause and effect relationships'. Such propositions acknowledge possible uncertainty and fallibility. 'Fuzzy generalisations' can also emerge from case study research when the fuzzy propositions are extended to similar contexts elsewhere (Bassey, 1999:84), in this case as recommendations.

Action research can be a 'powerful tool for change and improvement at the local level' (Cohen *et al.*, 2000:227). I, as participant observer with the teacher staff and school management, sought to see whether a change in the content of a lesson (more use of local examples and knowledge) and the way it was taught (discovery and action-based rather than inform and write down) could improve the relevance of the learning and the level of respect for indigenous knowledge. One cycle of Lewin's four stages in action research – planning, acting, observing and reflecting – was carried out (Lewin, 1946, 1948 cited in Cohen *et al.*, 2003). The data collection methods used were: focus workshops, lesson observation, active research observation (i.e. participant observation) and semi-structured interviews. Data was collected and given identification codes in a data inventory. Data analysis was achieved by using analytical memos to capture and facilitate 'analytical thinking' (Maxwell, 1992, in Cohen *et al.*, 2003:79) (see Table 1). Through this process I was able to capture data under category headings and thus reduce it to four themes which I used to structure the analytical memos, and then to code and organise the data using these themes in their sub-themes in the analytical memo structure. The four themes were: learner participation and responses, teachers' role and response, community role and response, and use of learning support material.

From the analytical memos I constructed the narrative using 'thick descriptions' (Cohen *et al.*, 2003:311), interspersed with vignettes (mini case studies) in order to provide adequate levels of raw data to illustrate important aspects. This led to the creation of several sub-themes. Following this, I interpreted the data drawing on the conceptual frameworks provided by the literature review until analytical statements emerged. Analytical statements are a means of trying to make sense of data by condensing them into 'meaningful statements' (Bassey, 1999:70). The analytical statements gave concrete statements of what was the case, and responded to the research question. I then I analysed why the case was such. Such interpretation enabled me to make fuzzy propositions and fuzzy generalisations which lead to forming recommendations, which addressed the research question.

Table 1. Analytical memo 1 – learner participation and responses

Category	Summary of Comments/ Opinion/Issue Arising	Data Source
Perceptions of what teaching methods are normally used	– Not related to life – Not individual teaching – Question and answer homework	– Student interviews – Responses regarding teaching methods used
Responses to group work methods	– Enjoyed doing them – Social learning – Brainstroming in research group	– Photo of engagement in group work in classroom – Observations of laughing, chatting
Perceptions of outdoor research activities	– Enjoyed doing them – Liked it – Became less shy – Less afraid of old people	– Focus group interview with two student research groups – Photo of group doing research with adults in the community
Perceptions of sources of knowledge	– Think that the teacher knows a lot – Think that elders know a lot – Think that both sources of knowledge are important	– Focus group interviews with research groups
Perceptions of what they can learn from learner-centred pedagogies	– Researching from elders helps to build students' confidence. 'Were afraid of some old persons but now less so.'	– Focus group interview with research groups.
School as a source of environmental knowledge	– Learn nothing about local environment in school – Learn not to light fires or cut trees	– Student interviews.
School as a source of knowledge relevant to their future careers	– Yes – No	– Student interviews

Findings and Discussion

Finding 1: Contextualisation contributed to relevance

In discussing the findings I address the research question, which, as mentioned above, is: Does integrating local environmental cultural knowledge into formal schooling contribute to curriculum relevance? If so, in what way?

This action research study, like others (O'Donoghue *et al.*, 2007; Taylor & Mulhall, 2001), found that integrating local environmental cultural knowledge successfully contributed to curriculum relevance both epistemologically (i.e. locally relevant knowledge, and to different

ways of knowing) and pedagogically (active, engaged learning processes situated in local context and cultures) (Hogan, 2007). It also fostered stronger school–community relationships and involved the teachers and communities in ethical deliberations about environmental concerns, as discussed in each of the aspects associated with contextualisation and education in this case (discussed in more detail below).

Finding 2: Contextualisation broke through traditional frames/barriers between teachers and students, students and elders, and community and teachers

'We let them get much closer to us; instead of feeding them we let them ask us questions' is how the head teacher at Nyamakurukuru explained this change in the relationship between teachers and students. The students felt that it gave them a different kind of access to older people and they became less shy and afraid of them. 'We get to talk to older people who know a lot' and 'It removes our shyness' were some of the comments received. The community members could see that their relationship with the teachers 'has improved because this activity showed us that we have a role to play in the education itself' (Nyamakurukuru sub-village leader, pers. comm., 2006). This represents a move towards the 'new dynamics' which Mushi, Malekela and Bhalalusesa (2002) wished to see 'between teachers, students and community knowledge holders' in order to enhance learning opportunities in Tanzanian education.

It appears that a shift in the power relations of the LPD had occurred. Bernstein (1990) claimed that this could influence the content of schooling and I support this view because in this short case study it brought local and indigenous knowledge into the classroom. This constituted a change to the usual content mainly drawn from prescribed books. This concurs with O'Donoghue *et al.* (2007), who found that in less structured, more contextually immersed pedagogies, prior indigenous knowledge can enter classroom discourse.

Vandenbosch (2007:7) found that the breaking down of the barriers between schools and rural communities can 'encourage inter-generational learning and relevance of the curriculum to the needs of rural people'. He shows that the outward movement of school knowledge can also occur – 'parents and community members can learn new ideas, methods and techniques from their children and teachers …'; thus contributing to development. The elders in the Nyamakurukuru case claimed to have learnt 'lots', but the scope of this case study did not allow for data collection regarding the outflow of knowledge from the classroom to the community.

The case study did provide an opportunity for three teachers to reflect on the question of community involvement in curriculum. Although still somewhat uncertain as to whether competence exists in the community, the teachers have asked the community to continue their involvement – 'Let us maintain this state where we were not just dependent on the school to teach the children. Let us get rid of the 'go ask your teacher' attitude and all play a part in educating our children' (Nyamakurukuru head teacher, pers. comm., 2006).

Finding 3: Contextualisation allowed formal education to take place outside of the school

The acknowledgement during this case study that learning was taking place outside the classroom – 'The children are learning about their environment in their environment'; and away from the school – 'education is not just inside school' (Nyamakurukuru elder and parent,

pers. comm., 2006) – represents a significant break in the conceptual 'frame' that assumes that education is schooling. In other words, it challenges the conflation of education with schooling to which many governments and educationalists implicitly subscribe. It also disrupts the notion that schooling must take place within the four walls of a building. This is a significant (though not necessarily appreciated as such) demonstration that education does not have to depend on a child's access to a central building. Providing school buildings and ensuring children's attendance at them are challenging issues which dog education providers in wetlands because establishing infrustructure is difficult and children have difficulty travelling. The notion that children can learn away from school could be researched further in terms of a contribution to improving wetland education services.

Finding 4: Contextualisation necessitated a change in pedagogy to more learner-centred, discovery methods

In order to give opportunities for local and indigenous knowledge to enter the classroom, this case study found it necessary to change the pedagogy from teacher-talks-student-listens to one where both students and teachers talk and listen to each other. The three teachers changed their pedagogy to more learner-centred methods. This weakening of the hierarchy – a weakening of the framing, as Daniels (2001) puts it – enabled the students to be more active, more inquiring and to do collaborative work. Students were encouraged to talk to each other in groups and while on outdoor research assignments, thus providing opportunities for the social learning described by Vygotsky (in Rieber & Carton, 1987) and Wals and Heymann (2004). Also, new voices entered the pedagogic discourse (those of the communities, as mentioned above). Students were permitted to be teachers and gave presentations of their findings, from which the teachers and elders learnt.

   The teachers participating in this case study also made learning and support materials for active learning which they had not done before, and which is not a common activity in Tanzanian government primary schools (Mrutu *et al.*, 2005). For the first time these teachers used the outdoor environment and the local community as educational resources. This represented a very adventurous breaking of norms by the teachers, 'We have never done this before' (Nyamakurukuru head teacher, pers. comm., 2006) said one teacher who, like most Tanzanian primary school teachers, usually employs teacher-centred, one-to-many pedagogies (Mrutu *et al.*, 2005). The ingredients for a successful change to learner-centred pedagogies which were adequately available during the case study action research period included: teacher enthusiasm, teacher competence, reference resources (some borrowed), compliant students, scaffolding from an outsider, support from the higher authority, support from the school management and the community (Hogan, 2007). As the Nyamakurukuru head teacher indicated: '…[the study] made science ideas seem easier to carry out in practice' (Nyamakurukuru head teacher, pers. comm., 2006).

   There were frustrations on the part of the teachers and hesitation on the part of the students in applying the new pedagogies. As was to be expected, it was not a complete change of approach and some norms still persisted even if they were incongruous with the more partnership-type methodology introduced in the case-study work. For example, the continued

presence of corporal punishment was incongruous with encouraging participation. While learner-centred pedagogies were taking place in the COBET classroom, the overall framing of the Nyamakurukuru school organisation continued elsewhere in the school as part of its 'implicit' curriculum (Eisner, 1985); examples of which include the marching drills and formal salutations to teachers. The teachers also did not feel that they had adequate training and resources, and they indicated that more preparation and small classes were needed for using learner-centred approaches (Hogan, 2007).

Finding 5: Contextualisation allowed for indigenous knowledge to come into the classroom

The subject chosen for the case study – *Maarifa* (General Knowledge) – in the COBET system is less classified in terms of its knowledge than other subject categories of the main primary school curriculum; meaning that it is not in a language that is insulated from other subjects, but rather allows a multidisciplinary approach and invites a variety of epistemologies.

This action research allowed for the students and the community members to also be teachers; thus their knowledge, which is local and indigenous, was explicated because the pedagogy provided opportunities for it. Box 1 demonstrates the way in which an elder was facilitated to teach about mushrooms and how 'book' knowledge about mushroom propagation (seeds versus spores) was mixed with local knowledge.

Box 1. Community gets voice as a teacher and knowledge mixing is facilitated

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Head teacher: 'You mentioned that mushrooms are available in the wet season. Are they really here? I seldom see them.'

Mama Mkumbenda, an elder, explained that mushrooms occur only in special places like under mtondo or mpandapanda trees.

Head teacher: 'So since the loggers are removing most of these trees, we will have no mushrooms left?'

Mama Mkumbenda: 'There are three main types of mushrooms 1. *Ligululwa* 2. *Lipoa* (white, big and flat) and 3. *Utembo* (easy to dry). You boil them a bit and then dry them.'

Female member of the school committee: 'And do mushrooms have seeds?'

I explained about the spores and how to see them when the mushroom is ripe.

Head teacher: 'Why don't we see them in the markets? I know a man who grows them and sells them in Dar es Salaam for a high price, why can't we make money from them?'

Male elder from the village: 'We need to find markets for them.'

The weakening of the framing also facilitated the weakening of the classification of the knowledge so that merging of book knowledge, teacher knowledge, students' knowledge and several different community members' knowledge took place. O'Donoghue *et al.* (2007) witnessed a disregard for the dialectic classification of indigenous and scientific knowledges. However, this study noted some differentiation between local knowledge and other knowledge, as shown in the following vignette drawn from observation data in the study:

> **Head teacher**: 'Are those local names and does anyone else understand them?'
> **Male elder from the village**: 'These are the names we use and even the loggers' agents understand these names, but they sometimes have other names as well.'
> **Head teacher**: 'I suppose it is good to know the local and the scientific names so that we can all understand each other.'

This mixing of epistemologies provides for the reappropriation of the rich heritage of indigenous knowledge which has 'intrinsic efficiency and efficacy' to complement 'the western framework' and to once again provide 'cultural reference points' in tackling the issue of sustainable development and human poverty that Odora–Hoppers (2002:11) desires. It is the type of scholarship 'that combines indigenous knowledge with external knowledge at a collegial level' and which 76 African delegates proposed at a conference in Ghana (Millar *et al.*, 2006:171) and which is endorsed by UNESCO (UNESCO, 2006). For such a mix of epistemologies, teachers need to recognise the value of school–home–community relationships and community members need to appreciate that their knowledge has value. Such dynamics were witnessed at Nyamakurukuru.

Finding 6: Contextualisation stimulated creativity and increased confidence
Both teachers and students responded creatively to the weakening of classification and framing which the contextualisation process facilitated. During the pre-lesson contextualisation workshop the teachers had creative suggestions – 'We have lots of learning support tools like the map and the aerial photo; let us discuss how we can use them for learning about seasons.' – and also made a rain gauge and a water cycle experiment from plastic bottles and local materials. Drawing freehand was encouraged in the children's graphic presentations of the data they had collected from the community members. These and other creative responses seen during the study concur with Daniels' (2001) findings for schools in England where a weakening of classification and framing nurtured students' capacity to be creative and to make choices. Creativity is seen as a crucial skill for getting out of the 'prison for the imagination' in which the existing language of sustainability binds us (Adams, 2006:14). Creativity, visioning, re-imagining the world and critical thinking are seen as essential to good environmental and sustainability education (Carlsson & Bruun-Jensen, 2006; Jickling, 2005; Le Grange & Reddy, 2007; Wals, 2007).

Students' confidence improved as a result of the learner-centered and discovery pedagogy. Table 1 shows the analytical memo on learner participation and responses which summarises the comments, opinions and issues arising in relation to this category of analysis. An example was the increase in participants' confidence to make presentations in public at the end of the process compared to the first time they tried it. This concurs with Bruun-Jensen's (2002) suggestion that empowerment/increased confidence can arise from appropriate teaching-learning techniques that make the curriculum relevant to the child's environment. This was done by providing active learning opportunities to engage the learners in researching indigenous knowledge from resources in their locality.

Official sanction for the weakening of the distinction between academic subjects and between the power positions of the players in formal schooling is found in the COBET curriculum, but such weakening is not yet common in Tanzanian schools.

Finding 7: Contextualisation brought local socio–political environmental issues into the classroom

Another change in content was that local socio–political-economic environmental issues, including the control of forest logging and the marketing of mushrooms, were discussed in the classroom setting, indicating a shift in power relations at Nyamakurukuru. The penetration of such issues into formal education provides openings for students to get the 'insight and knowledge' and 'social skills' needed for their engagement in 'concrete action' with their communities *for* the environment as discussed by Carlsson and Bruun-Jensen (2006:241).

Conclusion

While this study only focused on one case, it provided useful insight into some aspects of curriculum contextualisation, as discussed above. In engaging the interacting dynamics of relevance through efforts to contextualise the curriculum and draw on local cultural knowledge in teaching a module, the education of the youth living in the wetlands was qualitatively changed and improved (Hogan, 2007), although no in–depth or longer-term impact assessment or evaluation has been done. From the evidence presented in this study, however, it could be proposed that the contextualisation process contributed to the achievement of greater educational quality in the context of the objectives of the COBET curriculum module, and the lives of the learners in the wetland, particularly in terms of quality education criteria that focus on relevance, meaning-making and epistemological access (Barrett et. al., 2006).

Notes on the Contributor

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Personal Communications

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