



ENVIRONMENTAL SUSTAINABLE ACTION AND COMMUNITY DEVELOPMENT: A REVIEW OF A CONFERENCE

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Rapid economic growth and globalisation have positive and also negative impacts on environmental aspects and people's lives. And, people live in conditions of extreme change. This raises new requirements for living for every individual. In the current era of globalization it is necessary to stop the destructive processes of globalization, to create a different vision of globalization based on the principles of sustainable development, taking into account not only economic indicators but also social and ecological coherence. Sustainable development is a complex process that aims to ensure the well-being for present and future generations. However, the emerging economic and environmental challenges make this process more difficult.

Sustainable development issues still lack a deeper focus from the scientific community. On the other hand, it is important that these issues be addressed on a practical level in different communities. It is obvious that community development and sustainable development are two interrelated phenomena. The role of the education system in this area is unquestionable.

It is gratifying that there is a growing international focus on this area. An Environmental sustainable action and community development conference recently took place in South Africa in the period of 24th - 26th January 2017. The conference was organized by the Science and Technology Education Cluster, School of Education, University of KwaZulu-Natal in Durban. The conference topic was "Professional Learning of Science, Mathematics and Technology for Environmental Sustainable Action and Community Development". The main objectives of the conference are presented in Table 1.

Table 1. Objectives of the Conference.

Objectives
<ul style="list-style-type: none"> • The advancement of Science, Mathematics and Technology through Environmental Sustainable Action and Community Development • Fostering active engagement of all persons (researchers, teachers, members of government, community and industrial organisations), for environmental sustainable actions • Engaging Physical Sciences, Life Sciences and Mathematics teachers in curriculum related environmentally sustainable issues in a theoretical and practically based approach • Fostering a sense of community among researchers, teachers, members of community, government and industrial organisations • Promoting research and civil action to improve and develop Science and Technology programmes/curricular/actions in response to current and future needs. • Organise partnerships among relevant stakeholders in particular geographical areas for initiating, enhancing and promoting environmentally sustainable actions.

It is important to emphasize that the conference was opened to anyone who is interested in Science, Mathematics and Technology for Environmental Sustainable action and Community development. The conference plan had four plenary, short paper presentation, workshop, a fieldtrip, a poetry and a drama sessions. A resident artist (a fourth year student) depicted the activities of the conference in visual (drawing) format. There were four invited plenary speakers to the conference. The information about the keynote speakers is presented in Table 2.

Table 2. Conference keynote speakers.

Speaker	Description
Prof. Heila Lotz-Sisitka	She is South African National Research Foundation Chair (Tier 1) in Transformative Social Learning and Green Skills Learning Pathways, Rhodes University. She has over twenty years' of national and international experience in environment and sustainability education and learning, research, policy and consultancy work related to human capacity development, social learning, education system development, and social-ecological change. She has contributed actively to the post-apartheid education transformation process in South Africa via various national curriculum leadership roles including co-ordinator of the national Environmental Education Curriculum Development Initiative; member of a Ministerial Implementation Committee on Human Rights and curriculum development; and Chairperson of the National Environmental Standards Generation Body. She recently led the development of South Africa's first ever Environmental Sector Skills Plan, which pioneered a systems approach to thinking about environmental education and capacity development in the country and is now directing the national Green Skills system building programme for the post-schooling system.

Prof. Doris Elster	<p>She is a researcher and science educator at the Institute of Science Education, Full Professor and Head of the Department of Biology Education, University Bremen, Germany. Her core field of research is about teachers' professional development and inquiry-based science education (IBSE). Since 2010 she leads the educational lab Backstage Science. The goal of the lab is to promote science communication and the knowledge exchange of scientists with the public, teachers and students. She has much experience in the development, testing and evaluation of innovative teaching and learning modules, especially in interdisciplinary projects linking persons with different expertise in Communities of Practice. She and her team develop and test concepts and materials for inquiry-based learning in a context of education for sustainable development. She is scientific partner within the Graduate School NanoCompetence and works on the development of educational and communicational strategies for the transfer of scientific knowledge in the context of nanotechnology with and for society. In addition she is scientific partner of the Creative Unit FaBiT (Subject-related Educational Sciences in Transformation). Here she supports teacher candidates and in-career teachers in the development of inclusive teaching concepts and materials to promote teaching and learning in a heterogeneous society.</p>
Prof. Agnaldo Arroio	<p>He is a researcher at Faculty of Education, University of São Paulo, Brazil has experience in Chemistry, Communication and Education, with emphasis on Audiovisual Communication in Education, acting on the following topics: Teaching chemistry, Information and Communication Technologies, Communication media in education and science communication. He is a member of many editorial boards and Science Education Research Brazilian Association, ESERA, ICASE, IOSTE and the IOSTE Representative for South America. He is presently working with the Department of Health in Mozambique to promote education about diseases to communities. He is a Supervisor for Master and Doctor Study Program in Education and Science Education of University of São Paulo.</p>
Prof. Vincentas Lamanuskas	<p>He is Director of the Scientia Socialis, Chairman of the Scientific Methodical Centre "Scientia Educologica", and Professor and Head researcher at Šiauliai University, Republic of Lithuania. He has extensive knowledge, skills and experience as a specialist in Natural Sciences education, in Central and Eastern Europe, where he is engaged in teaching, learning, researching and the promotion of Natural Sciences in the respective countries. His expertise in writing and publication is evidenced in his work as an Editor in Chief of eight international journals, and a member of the Editorial Board of ten international journals. He has presented numerous seminars, workshops and worked collaboratively with international colleagues on various topics and projects, including the preparation of scientific articles and academic writing for journals. He is also an international expert in the European Union programme HORIZON2020 and an expert at the Agency for Science, Innovation and Technology (MITA), Lithuania.</p>



Figure 1. Conference registration



Figure 2. Welcome speech by Dr Khoza

The keynote address by Professor Lotz.Sisitka focussed on Transformative learning and ESD as a means of enabling quality and relevance in education. Prof Lamanuskas presented on Science and Technology Education in the XXIst Century: Some trends and visions. Professor Elster presented on Education for Sustainable Development in a German view – issues and challenges and Professor Arroio presented – Media literacy empowering citizenship. Each plenary presentation was challenging and extended the thinking about the significance and action for sustainable development in education.



Figure 3. Opening speech by Dr. Angela James



Figure 4. Meeting with the Dean, Professor Msibi.

The short paper session titles included the role of Indigenous Knowledge Holders in Agricultural practices in science teacher education, Indigenous knowledge and language in a culturally responsive science and technology education, Plastics and pollution – What can we do about it?, Survivability of Black Small-scale sugar-cane growers in the Ugu district municipality of KwaZulu-Natal, South Africa; Teacher learning in environmental education through professional development; Exploring and developing grade 4 learners' understandings of and actions towards healthy living at a primary school in Maraiannahill; Palmiet Nature Reserve and Educating for Waste management.



Figure 5. Conference programme and book of abstracts cover page

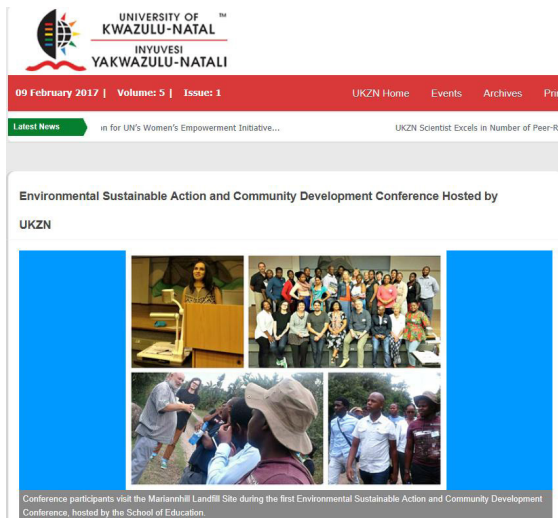


Figure 6. Information on the conference in local media

The workshop sessions included – Raising Green voices (making videos) – to empower people to express themselves in different social media; Where is the blue Helgoland lobster – a simulation game and developing science literacy – producing a fullerene model. The poetry, drama and visual formats were excellent in presenting environmental sustainability issues in a relevant, artistic and entertaining manner. As an education conference the integration of varied presentations other than presentation formations of papers enhanced the engagement of all participants.



Figure 7. During a workshop (producing fullerene models by hands)



Figure 8. Conference participants

The fieldtrip on the last afternoon was to the Mariannhill landfill, which is recognised as a conservancy. It is a sustainable, eco-friendly engineered “closed-loop” design and includes the treatment and re-use of landfill emissions. This is the first landfill conservancy in Africa and the world.



Figure 9. Landfill Site - Talk



Figure 10. Landfill site - walk

A visit to Durban is incomplete if PheZulu Safari park and a local school visit is not part of the itinerary. The province of KwaZulu-Natal is mainly populated by the indigenous people – the Zulu people. The Zulu culture is fascinating and you can learn so much about it from the tour and the Zulu dancers. A tour of the thatched huts where the various artifacts, beliefs and rituals of the people is explained. The Zulu dancers are adorned in their cultural dress and their rhythmic dances are linked to typical events – coming of age, courting, and marriage - is informative and entertaining. A trip through the Game Park where giraffe, zebra, kudu, buck and other animals are freely walking around is a once in a life-time experience, especially for foreigners who have never seen these animals in the wild.

Some of the conference participants from other countries visited Centenary secondary school. It was interesting and useful to meet with the school students, teachers, and also with the school administrators. Though, it was quite a short visit, however, the visitors managed to feel everyday life of a school, to discuss about school achievements and problems. It is always sensible to get acquainted just a little with the other country's education system at a real time and real place. Everybody was fascinated by the students' curiosity, high learning motivation, willingness to find out information. Teachers also encounter various challenges, e.g., work in a multicultural environment, varied and multiple student and their family experiences and so on. All this requires flexibility, high proficiency.



Figure 11. Cultural visit – Phezulu village – Zulu dancers



Figure 12. Visiting Centenary secondary school in Durban

It is without doubt, that a conference was successful. Good discussions, presentations, seminars are useful not only in a professional or scientific sense, but first of all in a sense of exchanging experience and communication. Practical conference aspect is also important. The participants of the conference actively participated in various workshop sessions,

discussed about concrete practical steps determining sustainable development strategy realisation.

It is obvious, that sustainable development processes and problems should be analysed, having evaluated various global change conditions. The importance of complex attitude is undoubted. One can dare assert, that the focus of the conference was namely a complex attitude and an intention to form perception, that sustainable development is a significant sphere of not only scientific research but also practical (especially at the local community level) activity as well.

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