Abstracts

FOSS4G and SAGTA Conference – St John's College, Houghton, South Africa
26th June to 1st July 2017

This list of abstracts for the various presenters is arranged alphabetically.

Water, water, everywhere...QGIS water and sanitation workflows in an informal settlement in Cape Town

Chris Berens
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Abstract

The workshop is focused on sharing basic QGIS workflows aimed at creating a spatial representation and understanding of the issue of water and sanitation in an informal settlement in Cape Town. Two primary elements are covered, viz. flooding and drinking water. Flood risk is assessed using LIDAR data; and access to drinking water draws on a community-based communal tap monitoring program supported by VPUU and the City of Cape Town. The measurement of the local experience is applied at a household level by spatial comparisons with the live Community Register that has been running in the settlement of 6500 households for 2 years (on QGIS of course!). While one aim of the workshop is to pass on experience it is hoped that the process will also enhance those workflows.

QWAT – Use and challenges in the South African Context

Immo Friedrich Blecher
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- Registered Scientist with SACNASP (South African Council for Natural Scientific Professions
- Member Groundwater Division of the Geological Society of SA
- Initiator of the South African QGIS User Group

Abstract

QWAT is a powerful QGIS-based water reticulation model, which stores and manages water source points, pipelines, installations and abstraction points. It uses PostgreSQL as database with multiple relations and foreign keys and has a variety of custom symbols typically used in the water reticulation industry. The presentation focuses briefly on the installation (quite straight forward but requires some IT knowledge), a live demonstration of the layers of the demo project (Switzerland) and the documentation. The model can be applied to South African water reticulation systems, especially in local and regional municipalities, which very often do not have huge budgets for these kind of systems, but mostly require simple viewing (and editing) capabilities via a web browser. The challenges to implement such a system at that level would be 1.) language (French to English translation of the documentation and features) 2.) creation of a few simple entry forms, 3.) setup and publishing of the QGIS project on the Internet, 4.) integration with other water data capturing software and 5.) training of staff.

Immo has worked in the groundwater and chemical laboratory industry for many years, mainly in IT systems, including the development of groundwater management software, and GIS systems, including Mapinfo, Arcview, ArcGis and QGIS. His experience stretches from simple water and mineral resource database development and mapping to sophisticated GIS calculations for resource assessments, but also lately the development of a few plugins for QGIS.

Digital products in the classroom – A practical approach using the Platinum Interactive Skills Atlas

Heather Brogan
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Pearson

Abstract

"Visuals created with new technologies are changing what it means to be literate. In the 21st century, the ability to interpret and create visual, digital, and audio media is a form of literacy as basic as reading and writing text" Visual Literacy in Higher Education by Ron Bleed

This session will be a *fully interactive workshop experience* (each delegate will get to interact with the digital product themselves) on the application and integration of the Platinum Interactive Skills Atlas into the classroom.

A short description of the Platinum Interactive Skills Atlas.

Pearson has developed the Platinum Interactive Skills Atlas web app to address the challenges teachers and learners face in acquiring Geographical skills such as map, atlas and GIS skills. This is an empowering digital resource that is highly personalised, dynamic, interactive and rich in content, providing an immersive learning experience for the teacher and learner.

Each Learner has their OWN Interactive Skills Atlas that enables them to create a highly individualised learner journey. Learners interact directly on their device/s with the Skills Activity and the Questions. Each Skills Activity has learning content that takes learners through the concept first. They then put the learning into practice by completing questions using multiple resources and tools available to them. Immediate feedback is given to each question.

PRACTISE, PRACTISE, PRACTISE - Learners get to practise the Skills Activities and Questions, MULTIPLE TIMES. This gives them the opportunity to revisit any Skills Activity or Question in preparation for any test or exam at any time in the year.

TRACK YOUR PROGRESS - Learners are able to track their progress across the Skills Activities in each grade, as well as within each Skills Activity. They are able to quickly see which Questions they have completed and either got correct or incorrect. They can also redo the Skills Activity if they would like to practise it again. Learners will be awarded badges on completion of each Skills Activity to track their achievements.

Heather started her career in education as a teacher at Greenside High School, teaching Geography across all grades. After a break in teaching and the birth of her 2 daughters, she shifted careers and began working in publishing. She has now been with the same company for 14 years in different roles ranging in focus from Editorial, Production and now into her present role as a Content Developer on the Humanities list. Heather's role here is to grow the list of print and digital products for our schools market, hence the development of the Platinum Interactive Skills Atlas to meet the need of learners and teachers in Map, Atlas and GIS skills.

Using models in Geography

Barry Malcolm Bryant
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Founder and facilitator: Education Support.

Abstract

What are models?
Effectively models are scaled down, or scaled up versions of reality which can be exposed to all the learning senses of our learners: site, 3D depth, touch, smell and mass. Here we will discuss what constitutes models, showing examples.

How do children and adults learn?
Here we look at the use of models to reinforce the way a child learns – Visual, handwork, experimentation.

Models and how they assist us to teach geography as a linking subject.
Geography is one of the few subjects that should be taught as a holistic subject linking as many of the applied sciences whenever possible (science, biology, geology, engineering, mathematical aspects etc.) Models play a major role in visualizing and comprehending these links.

Where have all the models gone and what are the implications?
Like many aspects of our modern world, models have been neglected and replaced without a full understanding of the possible implications.

Conclusion
Models still represent one of the most powerful visual tools in transiting the gap between reality and the classroom.
Used by educators, they offer a three dimensional reality that is difficult to replicate with other visual aids. For the learner, building them stretches their limits of creativity, problem solving, patience, attention to detail and ultimately their overall sense of achievement.

Barry Matriculated at the Hill High School in 1980, before attending Wits University where he sat for a BA degree and Higher Diploma In Education between 1981 and 1984. Thereafter he taught geography at Roosevelt High School for the next 19 years. Leaving formal education in 2003, he went on to obtain qualifications as a National Tourist Guide. In 2010 he returned to education on a somewhat different level, founding Education Support. Here, using all a career of practical skills and love of practical teaching he has been working with schools and the home schooling community. He is known for teaching integrated subject matter, using highly practical means**.**

Feedback on the Boston, 2017 – AAG Conference

Pamela Ann Esterhuysen
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The Wykeham Collegiate (SAGTA member)

Abstract

I am co presenting feedback on the recent AAG Conference in Boston. It is interesting how teaching goes round in a circle and after my trip to Boston, I have taken out some activities I used when I started my teaching career; not because they are simply back in fashion, but because they were very sound, 21st century educational practices. My feedback will focus on Project-Based Learning (PBL), storytelling (the art of and some examples of how) and some uses of 'wordle' as a teaching tool.

Pam obtained an MSc in Geography (UNISA 1991) – the focus area was looking at the *Human Impact on the Schoonspruit Drainage Basin, North West Province*. She is passionate about teaching Geography and carrying out meaningful fieldwork. 'I am who I am as I come from a mining family and the earth is in my bones'.

Exploring the role of a Google Group in enabling lesson resource sharing in a South African Geography Teachers' Professional Learning Community.

Dr Paul Goldschagg and Prof. Di Wilmot

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Wits School of Education & Rhodes University

Abstract

In this paper, the presenters examine the role of an online platform (Google Group) for enabling a geography teacher professional learning (PLC) community in South Africa, in the context of final year (Grade 12, age 18) national geography exam results, where learners consistently underperform. We focus on the geography school curriculum for Grades 10, 11 & 12 (ages 16, 17 & 18). Data (online posts) was gathered from the Google Group, where members post resources they have found useful and request assistance with their teaching. A total of 444 posts was examined. Of these, 187 yielded information which was classified according to curriculum topics in the South African national curriculum and then used as an analytical frame of reference. The Atmosphere, Geomorphology, Water Resources and Economic Geography received the most contributions. Geographic (Mapwork) Skills and GIS, Settlement and Population received the fewest contributions and indicated gaps where expansion could take place. According to the National Senior Certificate results of 2016, learner performance in these topics remains of ongoing concern. Pupils' average marks in these sections varied from 44% to 46% for the Atmosphere and Geomorphology; and from 45% to 57% for Rural and Urban Settlements and Economic Activities. As a bottom-up, online, easily-accessible initiative, unrestricted by time or place constraints and with a growing membership, we contend that these online groups, if suitably structured and moderated, have an important role to play in enhancing the quality of teaching and learning in South African school geography.

Dr Paul Goldschagg is a senior lecturer at the Wits School of Education. He teaches on both the BEd and PGCE Programmes, within both the academic and methodology modules. He has taught Geography for over 30 years and did his PhD on the cognitive effects of noise pollution associated with aircraft and airports, on learning.

Beyond the Classroom

Dr Colleen Henning
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Abstract

A major inflection point occurred in 2007 and we are living in an age of acceleration yet our classrooms have hardly changed. This presentation aims to highlight what happened in 2007 and identify some of the factors that are changing our lives exponentially. I will tell some of my story as to how this has affected part of my journey and the challenge that we all face to go beyond the classroom. I also think that Geography and Science provides a unique opportunity to allow our students to experience the joy of finding things out and I will share two lessons that you can take home, build and allow your students to experience for themselves.

Colleen is passionate about science education and is Head of the Science Department at St John's College. She was a Top 50 finalist in The Global Teacher Prize 2016 and coached a team of students who won the 2015 CERN Beam Line for Schools.

Colleen is an advocate of Open Education Resources and is working to grow a community of Science teachers. She believes that sharing and collaborating is crucial to quality education.

Colleen has a PhD in Particle Physics and has been teaching for 20 years.

Empowering Geography students in the 21st century

Fiona Kampmann
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St John's College

Abstract

This presentation will focus on the skills required in the 21st century to ensure that our students are equipped for the workplace of the future. It will consider what the prerequisite skills are and look at how these can be embedded within the teaching of the curriculum in the Geography classroom.

Fiona is HOD English at St John's College. Previously assessment specialist for official languages and arts at the IEB.

A Tangible Landscape

Samantha Jones
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St John's College

Abstract
The Tangible Landscape: a brief overview of what our tangible landscape is, how it came about and then a brief demonstration of some of the lessons that we have done with it at school.

Samantha is currently a Geography teacher at St John's College. She completed her BA (Hons) and PGCE at the University of the Witwatersrand. She is currently working on her Masters, also through the University of the Witwatersrand, Johannesburg.

Empowering Learners to Master Geographical Information Systems (GIS) as part of the Geography Curriculum in South African Schools

Brandon Louw
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Abstract
The National Curriculum Statement for Grades R-12 in South Africa was amended in 2012 into a single Curriculum and Assessment Policy document (CAPS). Geography forms part of the high school (14-18 year olds) curriculum and it has four focus areas:

1. Place
2. Spatial processes
3. Spatial distribution patterns
4. Human and environment interaction.

In an attempt to assist learners to develop these focus areas GIS was introduced as part of the curriculum. This was met with many obstacles from acquiring suitable hardware to sourcing appropriate software that would be accessible to all learners in a range of types of school in South Africa. This paper will outline the efforts of SAGTA (Southern African Geography Teachers' Association) in association with GISSA (Geo-Information Society of South Africa) to introduce GIS into the classroom. The implementation of a GIS Olympiad for Grade 12 learners (K-12) will be showcased; listing insights gained and discuss strategies to further empower educators and learners to develop analytical skills through GIS. The educational value of using open source software will also be discussed.

Brandon teaches at St John's College.

A FOSS mobile mapping solution for rural address assignment

Mnqweno Mnyengeza
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Geography: Statistics South Africa

Abstract

The White Paper on Integrated ICT Policy also calls for Statistics South Africa (Stats SA) and the South African Post Office (SAPO) services to collaborate and facilitate the multi-stakeholder participation in the drive for inclusive and uniform digital transformation, particularly for the address assignment initiative. As part of its Dwelling Frame project, Stats SA already has an addressing platform in place to assist with addressing for traditional and informal areas. However this process entails conventional paper-based, hardcopy maps, annotation and desktop digitising. The method has proven to be expensive, tedious, unreliable and cumbersome. An ideal mobile mapping application is sort with the aim of enabling the user to spatially capture and assign a new address, be able to edit, and populate new attribute data and to push these updates wirelessly to the head office server environment, thus eliminating the use of paper-based capture and the need to recapture at desktop. Q4AA, a free open source software (FOSS) powered by Quantum Geographic Information Systems (QGIS) has thus been identified and accepted as a fit for purpose, efficient, affordable and trustworthy interim mobile solution for rural address assignment. The aim of this presentation is to workshop and share information with audience on the processes and steps followed in modifying and developing a Q4AA system into a fit for purpose solution for future address assignment roll out that can be uniformly adopted.

Mr Mnyengeza is a registered Professional GISc Practitioner and Survey Technician with the South African Geomatics Council. He holds a master's degree in Land Information Management with the University of KwaZulu-Natal, BSc Geo-Informatics (elected modules) for professional registration purposes with the University of Pretoria and the national diploma with Cape Peninsula University of Technology. He has more than 17 years of experience in GIS and Geomatics and has since 2000 worked as a qualified professional for Power Construction as an engineering surveyor, Office of the Surveyor General as a chief industrial technician, CDNGI as an assistant director in cartography and has since 2010 been working for Statistics SA as a Deputy Director in the Geography division.

Africa, what's your story: An integrated studies program transforming the hearts and minds of African students

Lizzy Nesbitt
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Head of Latin, St John's College

Abstract

In 2016 Lizzy pioneered a month long integrated studies program for Grade 9 boys at St John's entitled, 'Africa at your feet'. This cross curricular program exposed students to the opportunity and potential of their continent and challenged them to engage. The program was improved and repeated in 2017, this time entitled, 'Africa: what's your story?'. This session will explore the journey of creating these two programs: the core convictions which underpinned it, its essential components, what can be improved, why it is such a valuable part of the curriculum and how it can be replicated in different educational settings.

Lizzy has taught Latin at St John's since 2011. As national examiner for Latin, she has developed the national curriculum for Latin and at St John's she has led various areas of curriculum and staff development. Lizzy is returning to the UK in August to lead a small school, using her passion to develop an integrated, creative and engaging curriculum for all.

Introduction to cartography with QGIS

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Abstract

This is a hands-on QGIS workshop focusing on cartography, including layer symbology and labelling and the Map Composer. Learn how to use some of the new features in QGIS and bring out the best of its cartographic capabilities.

Advanced QGIS for Educators

Admire Nyakudya
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Abstract

Teachers and educators who already have QGIS basics and who want some more advanced training around how to use QGIS in the classroom, come to this informal hands-on session where we will explore whatever requests you bring to the workshop.

YouthMappers: a global network to empower students in mapping the world

Victoria Rautenbach
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Centre for Geoinformation Science, Department of Geography, Geoinformatics and Meteorology, University of Pretoria

Abstract

OpenStreetMap (OSM) is an openly-licensed geospatial database created and edited by millions of volunteers worldwide. This database is used in various humanitarian projects, such as mapping during disaster relief operations or malaria elimination campaigns. In some parts of the world, for example, certain areas in Mozambique, no official cartographic data is available and hence OSM can play a crucial role. A mapathon (literally "map marathon") is a collaborative effect that is an effective method of collecting map data in unmapped areas. Through the YouthMappers global initiative, students are actively engaging in OSM-based collaborative mapping efforts internationally. We will briefly discuss the process followed by three YouthMappers chapters; Politecnico di Milano (Italy), Texas Tech University (United States of America), and University of Pretoria (South Africa), and lessons learned.

Victoria Rautenbach is a lecturer in the Department of Geography, Geoinformatics and Meteorology at the University of Pretoria, South Africa. Her research focuses on spatial data visualization to support decision making. Additionally, she is passionate about community engagement.

Using QGIS in support of the South African land claims process.

Frank Sokolic
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EduAction - GIS Solutions

Abstract

The Restitution of Land Rights Act 22 of 1994 provides for the restitution of rights in land to persons or communities dispossessed of such rights after 19 June 1913 as a result of past racially discriminatory laws or practices. When a land claim is lodged in terms of the Act, various forms of evidence are required to support the claim. In 2011 we were asked to assist in providing aerial photographic evidence in support of the eMhlangeni land claim near Howick in KwaZulu-Natal. This presentation describes how QGIS was used to georeference and mosaic photographs from 1959 and 1967, map homesteads and susbsistence fields visible on these photos, and tabulate the results for use in the court case at which the land claim was settled.

Frank Sokolic runs a GIS consultancy providing analysis, training and support in GIS. He has been involved in GIS since the early 1990s when he worked at the University of KwaZulu-Natal. With a background in meteorology, computer science and environmental science, he has considerable experience in GIS analysis, programming, website design, database development.

What's coming in QGIS 3.0

Tim Sutton
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QIS Project Chairperson

Abstract

We are about to enjoy a new version of QGIS - version 3.0 - and it is a big update from the 2.x release series. In this talk I will highlight some of the key new features that you will see when you use the software, and talk about some of the key 'under the hood' changes in the new release. I will also give a sense of where the QGIS project is in it's evolution to become one of the **leading** GIS desktop applications.

SANGO – The South African National Geography Olympiad

Clinton D. van der Merwe, PhD
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Wits School of Education (SAGTA Member)

Abstract

The Southern African Geography Teachers' Association (SAGTA) and the Society of South African Geographers (SSAG) are jointly holding the South African National Geography Olympiad (SANGO). Participants will be high-school learners aged 16 to 18 (they must turn 16, 17 or 18 in 2017). The inaugural Olympiad will take place in August 2017. The goal is for South African representation at the International Geographical Union's Geography (IGU) Olympiad which is held abroad on an annual basis. SANGO is ultimately designed to grow and develop Geography at secondary school level and to encourage the advancement of Geography at higher education institutions as a result. This talk will elaborate on the how, when and why of SANGO.

Clinton David van der Merwe is a Geography Teacher and Lecturer at the Wits School of Education. He has recently completed his PhD in Heritage Tourism and is an active member of the geography community. He is a councilor (Ministerial Appointment) of the South African Geographical Names Council (SAGNC) and a National Examiner of Paper 1 – Geography Grade 12, for the Department of Basic Education (DBE). Clinton is passionate about teaching Geography.

Connecting and responding to the challenges of quality geography education

Professor Di Wilmot
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Rhodes University

Abstract

This paper responds to the need for quality education. Using the latest global frameworks published by UNESCO (2015, 2016) and the International Geographical Union's Commission on Geography Education (2007, 2016), the paper describes responses to the call for quality education for a planet at risk. The paper explores the implications of re-orienting geography education towards sustainable development, and what this means in terms of 'what' is taught (knowledge content) and 'how' it is taught and learned (pedagogy). It argues for a different approach to teaching and learning and the need for appropriate teacher support including change-oriented learning support materials that model the new approach to geography education and teacher professional development. My main contention is that geography educators in southern Africa must connect and becoming active members of local, national and international geography education networks and professional communities of practice. This will enable them to establish and build new, and strengthen and expand existing, professional communities of practice and networks which are mutually beneficial and supportive of efforts to achieve quality education through transformative learning.

Di Wilmot is a Professor of Education and the Dean of the Education Faculty at Rhodes University. Before being elected Dean in 2010, she was a driving force behind initial teacher education at Rhodes University for more than a decade. Trained as a high school geography teacher, she continues to be involved in geography teacher education and research. Her current research interests include curriculum and pedagogical transformation. Di is a regular participant in international education processes which include piloting and further developing a Climate Change Education module for teacher educators as part of UNESCO's Re-orienting Teacher Education to Address Sustainability initiative. In 2016 she was appointed as a member of the Steering Committee of the International Geographical Union's Commission on Geography Education for the period 2017-2021. She is a co-author of Schooling for Sustainable Development in Africa, which completes Springer's eight book global series.

Using QGIS in Preparing the Electricity Distribution Area of Supply information for NERSA

Derrick Wells
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ESKOM

Abstract

Describes the utilization of QGIS for the preparation of the electricity distribution Area of Supply (AoS) information for NERSA as part of their national AoS GIS project. This work has been done in response to a project initiated by NERSA during 2013 for all licensed supply authorities to submit information relating to their supply areas. NERSA had no geographical depiction of the electricity distribution AoS – this necessitating the project. Required the submission of a listing of towns/villages/suburbs that the particular supply authority services. The author of this paper was approached to consolidate the Eskom submission – the processes followed is covered in the paper "**Open Source Use Case: Preparing Electricity Supply Area information for National Energy Regulator of South Africa (NERSA)**" presented at AfricaGeo2014. The author joined the NERSA project team as the GIS Specialist on the project. Eskom's submission was adopted as the "point of departure" for the spatial data.

This paper shares the methods and processes used to formulate these AoS information within the project. QGIS was used as the GIS of choice as well as SpatiaLite the spatial data format of choice.

Elements that required doing were:

- Refining of the 65000+ settlement records to meet the stringent project requirements;
- QA of polygons created by the de-centralized data team;
- Updating of the polygons after the municipal based consensus meetings;
- Creation of map books for:
    - the presentation at the municipal based consensus meetings;
    - final submission to the NERSA board;
    - sign off by the Eskom provincial GMs.

Derrick has nearly 36yrs service with Eskom – first in the survey field and then in the Spatial Information field. Originally he studied for a Higher National Diploma (Survey) before doing a Post-Graduate Diploma (GIS) through UNIGIS. He is registered as both a Surveyor and a Geoinformation Technologist. He serves on the SAGI Executive as National Vice President:GISc. He is a big supporter of OpenSource GIS and try promote its use and adoption.