Students gain practical experience while serving the community

by Dr Martina Jordaan

In 2005, the Faculty of Engineering, Built Environment and Information Technology (EBIT) at the University of Pretoria introduced the community-based project as a compulsory module in the students' undergraduate curriculum. This initiative was a new endeavour for the faculty and the first of its kind for students in the disciplines of engineering, the built environment and information technology in South Africa.

Since community-based learning was not included in existing modules at the time, it was necessary to establish a separate new module to cover this field. One of the complicating factors in developing such a module was the demanding time schedules of EBIT students.

The Community-based Project (JCP) module is offered on an open-ended and project-orientated basis. Students have the option of attempting the eight-credit (40 hours) module in any one of their undergraduate years of study, but preferably not during their final year.

Depending on the specific nature of the project, it can be attempted during the course of a semester or during vacation time. Projects can be done by students individually or in teams. The faculty encourages multidisciplinary project teams that consist of team members from different schools and departments in the faculty.

Students choose projects in an area they feel passionate about, while also considering the needs of the community. Popular projects include computer training for community members, designing and uploading websites for non-profit organisations, assisting secondary school learners with Mathematics and Science, renovating rooms in orphanages, and designing and building jungle gyms.

This module was formally accredited by the Engineering Council of South Africa (ECSA) in 2006. Since its inception, the number of students enrolled for the module has grown from 238 in 2005 to 1 459 in 2010. The number of projects undertaken in the various communities increased from 47 in 2005 to 445 in 2009.

Objectives, outcomes and assessment

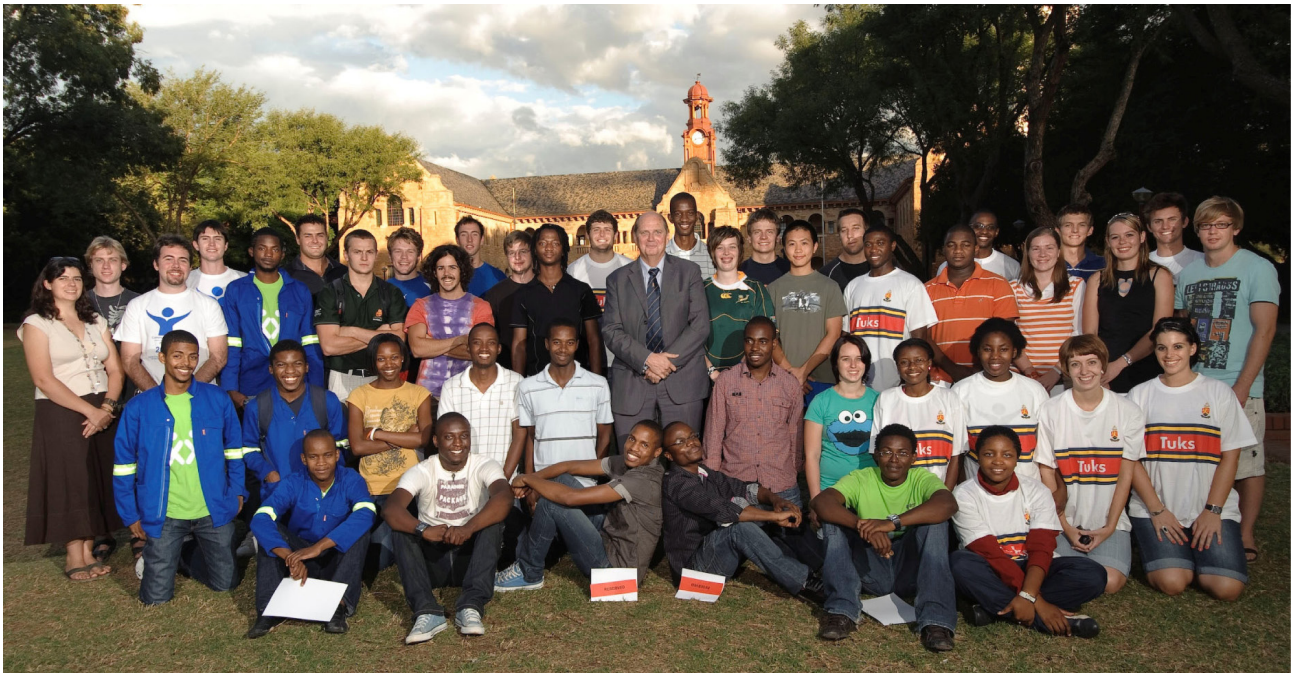
Some of the critical cross-field outcomes stipulated by the South African Qualifications Authority (SAQA) are that students should be encouraged to think for themselves and be able to work in teams. Importance is attached to the acquisition of general intellectual skills, communication skills, time management skills, and attitudes and values. The Community-based Project module tries to accommodate these issues as reflected in its objectives and learning outcomes.

The main objectives of the module are as follows:

- The execution of a community service-related project, aimed at achieving a beneficial impact on a chosen section of society, preferably, but not exclusively, by engagement with a section of society that is different from the student's own social background.
- The development of an awareness of personal, social and cultural values, an attitude to be of service and a deep understanding of social issues.
- The development of important multidisciplinary and life skills, such as communication, interpersonal and leadership skills.

Depending on the nature of the project chosen by the student, the main learning outcomes of the module are demonstrated when the student exhibits the following:

- A deep and broad understanding of the social issues relevant to the project
- The ability to communicate effectively with the community at large



→ *Students who have completed the Community-based Project module can enter the world of work with a better understanding of the needs of the community.*

- The ability to communicate effectively through writing and presentations
- The ability to perform leadership functions
- The ability to work effectively in a multidisciplinary environment and to perform critical functions

In assessing a student's project work, the mark allocation is based on what the student has learned and the extent to which the learning outcomes have been achieved. The final mark earned is a reflection of the quality of learning achieved rather than the nature of the service provided.

Structure of the module

Although the main focus of a community-based module is service to the community, students are required to complete assignments and reflect on their experiences. Assessment includes the attendance of compulsory contact sessions, evaluation and approval of the project proposal, self-assessment, peer assessment and assessment by a supervisor from the community, as well as the community-based lecturer, during the execution of the project.

It also includes three reflections written during the project, a report in the form of a blog, and a presentation to the project coordinator, peers and the community in which the student was involved.

Ensuring sustainability

One of the greatest challenges of the module is to ensure the sustainability of the module, as well as the sustainability of the projects done in the community and with the community partners. At the end of the project, the students' participation may end, but the communities' realities remain.

Giving students a say in the different phases of the community projects has a strong influence on the academic and civic engagement that follows, and allows students to engage in problem-solving, decision-making, planning, goal-setting and helping others. Students who are dedicated to their projects develop a sense of social awareness and usually feel responsible for the continuation of their project and the partnership with the communities.

To ensure the sustainability of projects and students' involvement in the communities, a mentorship programme has been established where students who have completed the module become mentors to the following year's cohort.

These mentors ensure the continuation of their projects by assisting the new entrants to the module in executing their projects and assessing them upon completion of their projects.

→ *Participating in the Community-based Project module helps develop a sense of unity between the students.*

Attitude change

Community-based learning shows students that they can make a difference. It increases their confidence as citizens. Although the students' collective actions are not always successful, it teaches them to learn from their mistakes by engaging in a continuous sequence of action and reflection.

Community engagement is viewed as valuable, useful, relevant and interesting. Students become more engaged and acquire greater knowledge and skills. It also becomes more meaningful for students when they choose the issue to address, when the issue requires analysis and problem-solving, and when there is a personal connection with the community to the task at hand. Community engagement only becomes meaningful for students when the service actually meets an important need in the community.

It provides students with opportunities for meaningful involvement with the local community. As they implement service projects, students usually develop greater awareness of social issues and the need for civic responsibility.

They often learn leadership, teamwork and social skills, and improve their critical thinking and analytical abilities. In the process, they tend to increase their self-confidence and self-efficacy. Feedback from students is very positive.

Campus community partners

A list of more than 500 community partners has been compiled where students may do their projects. These community partners identify their specific needs and submit them to the University each year.

New community partners are visited or invited to discuss possible new projects and developmental needs. Many community partners contact the University and request assistance. Students also identify possible new partners and projects.

To ensure ongoing engagement with the community partners, it is important to establish a good relationship with a contact person at an institution or non-governmental organisation (NGO) where the students will be doing their field work. An empathetic and dedicated supervisor or contact person on site ensures the successful execution of a project and positive feedback from the students.

The community partners assist in assessing the students on their project outcomes. This assistance is acknowledged in the blog reports of the students. Feedback with regard to module outcomes and possible new projects is requested from the community partners.

Funding

Most of the funding received for the implementation of the community-based projects is used for the transportation of the students to and from the communities. Some corporate sponsors have come forward to address this problem. These companies take responsibility for certain projects that are identified by the company. They then use the outcomes of the projects to meet their social responsibility targets. Such agreements are in place with Exxaro and Kumba Iron Ore.

Junior primary learners enjoy their *cosy* reading corners

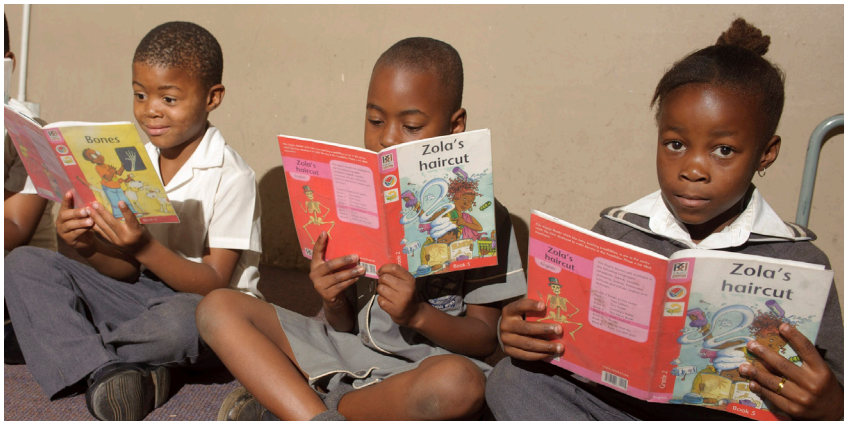
The vision of three students to create reading corners for learners became a reality when they carpeted the cement reading corners in three classrooms at the Irene Middle Farm School as part of their community project. These reading corners are now warm spaces where the learners can retreat into the worlds of their books and participate in other activities there.

The learners of the Irene Middle Farm School benefited from the students' work.

The students carpeted the reading corners in three junior phase classes. Each corner was 3 m^2 in size and allowed sufficient space to seat the whole class. As none of the students had ever laid carpets before, they had to plan their project really well in advance in terms of measuring, marking up the floor and applying glue to the carpet. This proved to be much easier on paper than in practice. The students had to do a lot of brainstorming as they went along, and succeeded admirably in creating warm spaces where the learners could sit, especially on cold winter days.

The unforeseen practicalities included surveying the three classrooms to decide on the location of each reading corner and clearing out these corners. This included moving shelves, cabinets, files and desks. The other big job was cleaning the floor in preparation for laying the carpets. Preparation included sweeping the area, scrubbing the floor (to allow the adhesive to bond), washing the allocated area (to ensure that no dust was left behind), and finally applying the adhesive.

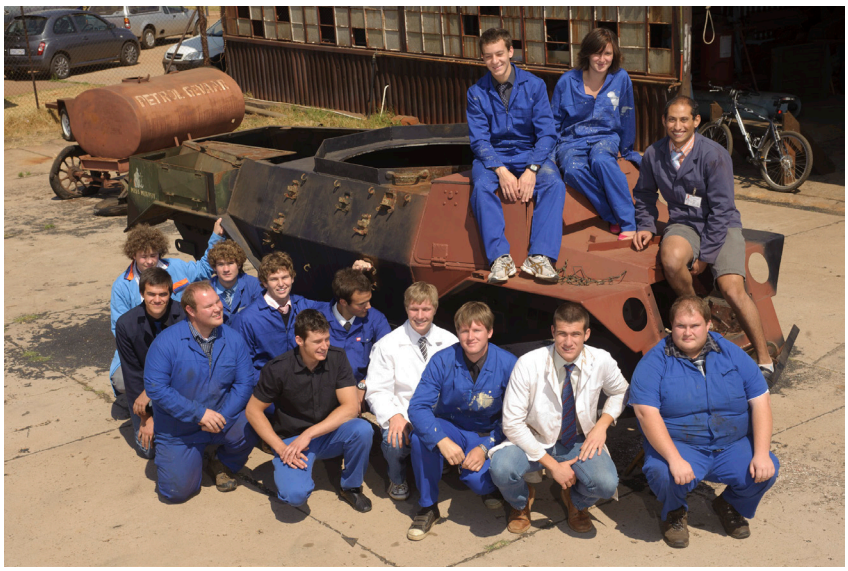
On the last day, there was a great bonus: a donation of books for the school! The books were all brand new, and added to the excitement of finalising the reading corners. The three students kept their tools so that they could maintain the carpets. In their words, "Mission accomplished: we came, we saw and we conquered those reading corners."



The learners received a donation of books as well.

LOVING restoration brings new life to an old military vehicle

"She was missing a carburettor when we first met." With these words, David Toma, leader of this Community-based Project (JCP) group, expressed just how involved 15 second-year civil engineering students had become with their community project: the restoration of a 1942 Marmon Herrington MKIV at the Swartkop Air Force Base (SAFB), the oldest operational air force base in the world.



These civil engineering students spent over 200 hours restoring an old military vehicle.

The vehicle had been left out in the open for many years in Cape Town. It was sent to the SAFB where it was provided with covered parking. The group's goal was to get back to the way it had been in its glory days and to get it running like it used to. They kept all the original parts or replaced them either with identical parts or similar parts without changing any of the mechanical properties (such as the six-volt system on which it operated, which was replaced with a generator, not an alternator).

At their project presentation for assessment, David regaled the audience with a magnificent slide show of the project since its inception, with a hugely entertaining and informative commentary, and humorous anecdotes. Watching a four-ton armoured truck being towed uphill by a Nissan Micra was truly something to behold!

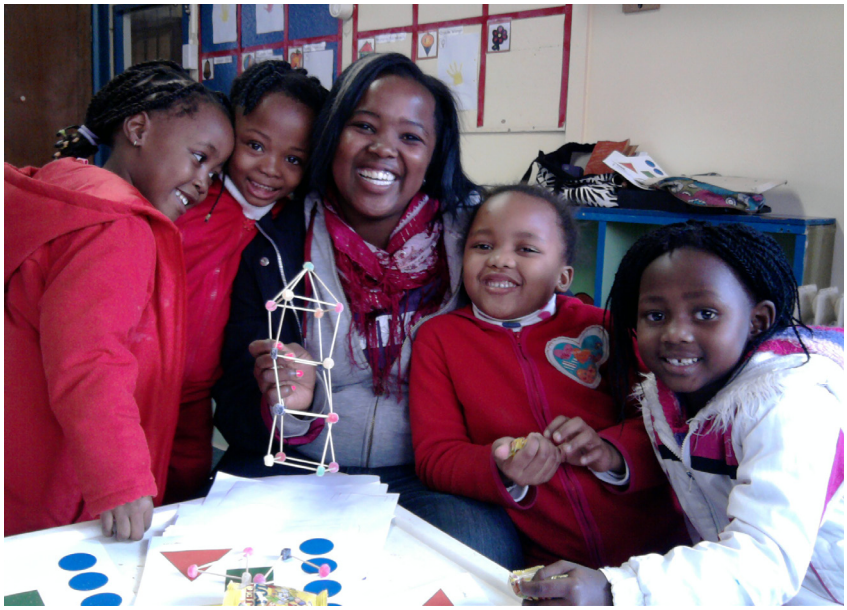
Walter Moll, vice-person of the Friends of the South African Air Force Museum Society (FSAAFMS), considered the students' contribution to be significant and was impressed by the fact that the students wanted to be involved in a project of this nature. The FSAAFMS is involved in raising funds and restoring old aircraft and other old military items based at the SAFB, and supported the project all the way, providing advice and raising funds to help with the restoration.

The group has spent over 200 hours on the restoration so far. This restoration not only saved a forgotten classic, but also contributed to preserving a part of the country's heritage.

David says the group will continue cooperating with the SAFM and the FSAAFMS to help restore various aircraft, weapons, anti-aircraft vehicles and other ground support and military vehicles, as part of sustaining the impetus they created. They will also act as mentors to the 2011 student group.

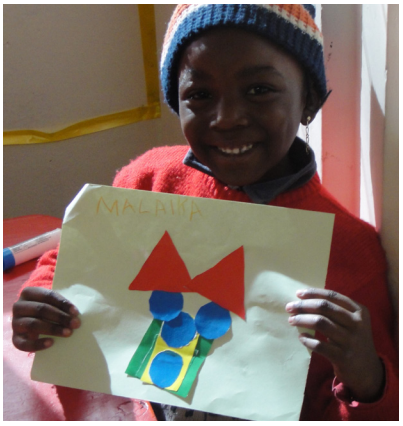
Tiny tots become TECH SAVVY

Eight enthusiastic students from the University of Pretoria were met with great excitement when they arrived at Sunnyside Preprimary School – not least of all because of the soccer fever that had gripped this school! The students had planned to present ten days of hands-on mathematics, science and technology lessons for the little ones in the form of the Tekki Tots programme, which was developed by the Meraka Institute.



Learners at Sunnyside Preprimary School discovered that technology can be fun.

When the innovative group of students finally got started, they used brightly coloured jelly tots to determine the preschoolers' different levels of learning. The children went on to make necklaces to learn about patterns and to learn to cut in straight lines, they performed "magic tricks" using cabbages and different solutions to learn about acids and bases, and explored the wonderful world of sounds and vibrations. This culminated in the children creating their own special musical instruments and even forming a band, singing favourite songs like Old McDonald and Big Fat Mama. Other fun activities included organising data using smarties (and, of course, eating them at the end of the lesson!) and mixing and separating colours, which led to much experimentation, not to mention the fascination at seeing the colours separating before their eyes.



Shapes take on a new meaning.

This is the fifth year that students from the University of Pretoria have taken the Tekki Tots programme to this school. Other projects that are being undertaken at the school include revamping the sandpit and building a roof for the school's entrance.

Headmistress Marietjie Engelbrecht commended the students and the University for initiating the JCP programme. She said that the Tekki Tots lessons encourage Grade R learners to think "outside the box" and that the one-on-one interaction with the students is invaluable. She looks forward to ongoing engagement with students from the University of Pretoria.

Fresh, FUNKY space

where youngsters can eat and learn

The Thembisa after-school day-care centre takes care of 30 primary school children in the afternoons and during the holidays. This centre was established to provide the learners with lunch and help them with their homework. There are also volunteers who help the children with their mathematics homework, in particular.

→ *The students get hands-on experience in transforming the Thembisa day-care centre.*

Four civil and mechanical engineering students from the University of Pretoria decided to revamp the kitchen and dining hall of the centre during their July holidays as part of their JCP module. They happened to have chosen one of the coldest weeks of the year, and worked in freezing weather to finish their project in the allotted five days. They were lucky to have Pastor and Mrs Vilakazi who provided many delicious meals during the week.

The students received many donations for their project, for example, a school donated 30 table frames, a plumbing supplier donated a geyser, and a hardware supply company donated a whole range of fastening equipment and hundreds of litres of paint.

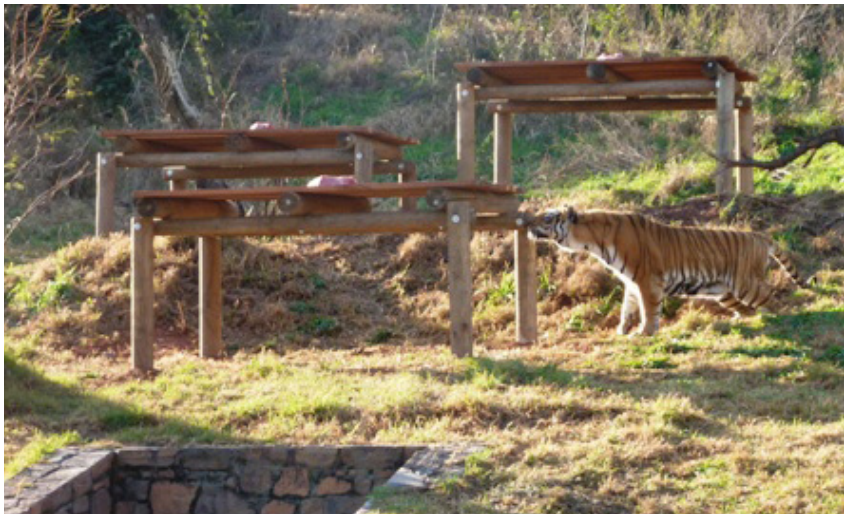
The space was transformed from an empty shell to a warm, friendly room, with freshly painted walls, a desk for each child, pigeon holes, cupboards and bookshelves. Almost everything was made from scratch, including the desks that were built and the pigeon holes that were constructed.

Youth Day on 16 June was freezing, but the students kept warm by giving the dining hall its final coat of pink paint and tiling the kitchen. The final day saw a lot of scurrying around to get everything finalised and the place cleaned up. Only the four students were allowed inside the building until the “big reveal”. Pastor and Mrs Vilakazi were amazed at the transformation.

Alerna Möller, a third-year civil engineering student, said the group was grateful for this opportunity to help the children, and to see how such a seemingly small endeavour could bring such happiness and joy to so many people.

New basking space for big cats at the zoo

Everyone enjoys a visit to the zoo, especially to one of the world's top ten zoos. The National Zoological Gardens, located in Pretoria, was founded in 1899 and established as a national zoo in 1916. It receives in excess of 600 000 visitors annually. A group of seven construction management and industrial engineering students decided that building platforms in the tiger enclosure would not only provide these big cats with a comfortable place to eat, sleep and bask in the sun, but would also create a better viewing experience for the public.



→ The tiger enclosure at the National Zoological Gardens in Pretoria is transformed.

During the July holidays, the pretty ordinary tiger enclosure was transformed into a much more interesting and engaging space with three platforms. This was quite a hefty task at times, not just because of the heavy materials that were needed to build the platforms, but also because these materials had to be transported by hand from the lower level of the zoo to the higher level where the tiger enclosure is situated.

Digging huge holes, pouring cement, drilling and hammering in the tiger enclosure under the watchful eyes of the striped carnivores was quite a chilling experience, but luckily a ten-foot fence and a huge ditch separated the students from the ferocious beasts.

The construction was concluded relatively quickly, thanks to the hard work of the group, and the three platforms were completed in just four days. The students used big, juicy steaks to lure the tigers onto the platforms, but as tempting as the meat was, the tigers were still wary and took their time reclaiming their territory.

Industrial engineering student Christiaan Ehlers says, "Our JCP project was an awesome learning experience. It was a wonderful opportunity to give back to the community. It was jam-packed with hard work and fun. We helped the community by using our time to build something useful and beneficial."

This project is just one of the many and varied projects the students of the University's Faculty of Engineering, Built Environment and Information Technology have been involved in at the zoo. Other projects have included building hammocks for the gorillas, renovating the suricate camp, and building mufflers for the noisy machinery.

Robynn Ingle-Moller, project coordinator at the National Zoological Gardens, says, "The students are a huge benefit to the zoo, as they provide refreshing support to the zoo's often overtaxed Civil Works Department. The students are not the only ones to benefit. The staff also gains insight and knowledge on how to manage the students, while the students in turn become tutors and mentors. In so doing, they gain important professional development skills that promote learning."

Venda Secondary School library is upgraded

A library that no one could use, with books in tatters and in complete disarray, stacked in dishevelled piles on shelves groaning under their unkempt load, prompted ten students from the University of Pretoria to jump in and transform this chaos into a true place of information. After the project had been concluded, the pupils of Tshilavhutume Secondary School in Mapate village in Thohoyandou, Limpopo, were able to easily access the books they wanted to use.

→ The disorganised library at the Tshilavhutume Secondary School is turned into an organised space.

The team was hoping to obtain sponsors for their project, which was executed over four days during the July holidays, but did not have much luck. The only sponsor was the University of Limpopo/Venda, which donated shelves, tables, a television set and microscopes, and provided them with transport. The lack of sponsorship did not deter this committed, enthusiastic team in their orange overalls. They tackled this gigantic task with gusto, cleaning out the entire library so that they could paint it and start stocking it from scratch. It took them two full days to sort out the books, working right through the night.

Despite the lack of sleep and very hard physical work, the students found time on the last day to have a career guidance session with the Grade 12 learners.

Their hard work paid off, as the school now has a library it can be proud of. It can now be fully utilised by the learners, who love their new library. The whole community was really excited about the new library, to the extent that even the primary school learners came to see the library on the last day.

The principal, MP Mathoma, says the school "now has a library." He was amazed at the transformation of the previously unused, dirty space into this new, clean, organised space. He says learners now frequently use the library. The school is very grateful for this intervention.

Vinolia Teffo, a metallurgical engineering student, said that she wouldn't trade this experience for anything. "JCP is really a good platform for students to be proactive in touching communities. I have learned that when people work together as a unit they can achieve a lot and make a tremendous difference in the lives of those they serve. The highlight of my experience was when the community expressed their gratitude," she said.

CONSTRUCTING

a better community

Students in Construction Economics, various role-players from the construction industry and the Berakah Educational Foundation are currently involved in a community engagement project in Mamelodi East.

This project, under the leadership of Riaan Jansen, a full-time lecturer in the Department of Construction Economics, was acknowledged as an exceptional innovation to improve teaching and learning. Jansen received a certificate at the biannual Education Innovation Awards for "learning by doing" for the impact this project has on student learning and student engagement.

→ *Construction Economics students gain practical experience while serving the community.*

The departments in the School for the Built Environment are among the many departments at the University of Pretoria whose students are involved in this large-scale project. Instead of each group undertaking individual projects, students work together to gain practical construction management experience at two sites in Mamelodi.

Viva Village houses orphaned and vulnerable children, while the Berakah site comprises a multifunctional building that will be used as a preprimary school, a training facility, community hall, clinic and church. It will also include a feeding scheme. The project is linked to the learning outcomes of construction economics subjects such as Construction Management, Building Science and Quantity Surveying Practice.

The first phase of the project was completed just before the construction industry closed for its annual December break in 2009. The second phase commenced in February 2010 and was spread over 14 weeks during the first semester. One day per week was allocated to the project so as to ensure that the construction practice and theory were integrated over this time.

Work during the second semester was mainly done by Quantity Surveying students, as most of the Construction Economics students had almost completed their required 40 hours of community work.

The University's close relationship with the construction industry creates the opportunity for contract research and the employment of students, and enables the department to keep abreast of developments in the construction industry to ensure better student education. Apart from coordinating and providing student labour for the Berakah and Viva Village sites, the Department of Construction Economics also procured services and material for the projects.

The project is a high-impact project and the first of its kind where suppliers, contractors, lecturers and students combine forces to make it successful. While practical work is usually reserved for fourth- and fifth-year students, third-year students now get an early introduction to site work as the project involves the disciplines of both quantity surveying and construction management. The value of the knowledge transfer between students, lecturers and the community is immeasurable.

Initiative develops skills in the field of informatics

by Kirstin Krauss

The Department of Informatics at the University of Pretoria was involved in a number of initiatives to combine information and communication technology (ICT) research and teaching to support community development.

This forms part of a special community development project in the department, known as the Informatics Initiative. This project was launched when the department noticed that so many academically disadvantaged students experience difficulty in coming to terms with studies in a technological and business-orientated discipline such as informatics. The department also came to realise that academically successful students tend to move into lucrative positions in industry, and are "lost" to the academic world.

The aim of this initiative was to enable students to complete their studies successfully, and to encourage them to continue with postgraduate study and eventually become lecturers in the Department of Informatics.

The initiative therefore has the following aims:

- To identify and help undergraduate students who experience difficulties in adapting to studies in informatics
- To identify and encourage undergraduate students who may wish to continue with postgraduate studies and eventually embark on an academic career
- To inform students and staff about what is happening in the information technology (IT) industry
- To reach out to disadvantaged schools and communities, and inform and support them with regard to the impact and role of IT in their communities and in their personal lives

To achieve these objectives, the department offers special tuition classes to students who experience problems with the subject, and exposes students to lectures by academic visitors to the department.

Building capacity in Zithobeni

Following a special teacher training initiative that was launched with funding from the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in rural KwaZulu-Natal in 2008, UNESCO has provided the Informatics Initiative with another grant of US$8 000 for teacher training at Kgoro Primary School in Bronkhorstspruit.

With this initiative, the Department of Information Science will partner with the Department of Informatics to present information and communication technology (ICT) literacy and information literacy teacher training. So far, 43 teachers from both the primary and the secondary schools at Zithobeni have attended two courses at the University's Mamelodi Campus.

UNESCO has also requested the department's assistance with the testing of a draft media and information literacy curriculum in the Zithobeni community. This curriculum, proposed by UNESCO, is not yet available in the public sphere. Therefore, the University of Pretoria and the Zithobeni community have the opportunity of being the first to engage with it. The teachers from Zithobeni receive this training free of charge.

This is an exciting opportunity for the community and, as far as ICT for development research is concerned, it is hoped that some useful results will be generated and published from the experiences gained in engaging with the community.

According to the headmistress of Kgoro Primary School, Mrs Phoofolo, the school is situated in the township of Zithobeni, 7 km north of Bronkhorstspruit and 60 km east of Pretoria. It has 1 215 pupils, 27 teachers and eight administrative staff members.

The Zithobeni community is disadvantaged in terms of social and economic life. Most people stay in informal settlements and are unemployed, making it difficult for the parents to pay school fees. There is a high level of illiteracy in the community. This makes it difficult for parents to be involved in the economic and academic matters of their children. The school has programmes on HIV/AIDS and presents regular awareness activities. The teachers try to make their learners and the community aware of the extent of this epidemic. The high number of orphans among the learners (41) is a further challenge for the school.

Over the years, the Department of Informatics assisted the school by donating ten desktop PCs. This has enabled the school to create a computer room that is used by teachers to prepare their lessons and to compile tests, examinations and learners' reports.

Continuing the teacher training project in Tugela Ferry

The department's involvement with a local school in Tugela Ferry, a small rural village in KwaZulu-Natal, was launched in 2008, when 24 teachers from Lobethal Independent School received training in practical ICT literacy. This village was identified as one of the most economically disadvantaged communities in South Africa, and was in dire need of various forms of development and support.

During 2010, PhD research in Tugela Ferry formed part of the Informatics Initiative. The first community engagement endeavour for 2010 was a teacher training project from 6 to 10 April, where the teachers received training in MS Word and MS Excel. The revision and training was finalised in July 2010, and the community-owned course was also completed. The Tugela Ferry community is now ready to take over the ICT initiative that was started with them. The success of the training is reflected in the fact that the teachers who successfully completed their training have gone on to successfully teach nurses in Philanjalo to use MS Word.

→ Buzwe Gxulwana, a master's student in Informatics, assists the teachers from Zithobeni.

In addition, Dr Liana le Roux and one of her master's students from the Department of Social Work and Criminology at UP will collaborate with the Khayelisha Orphan Care Centre in Tugela Ferry to support the caregivers and to facilitate training on child therapy for molested and mistreated children. Through continuing the friendships made, more ICT training courses were planned for the remainder of the year.

In April 2010, eight Grade 11 learners and two teachers from Lobethal Independent School in Tugela Ferry had the opportunity to visit the University of Pretoria.

During the campus trip, the learners were invited to attend a dinner with Prof Trish Alexander and Zodwa Mahlangu from the Siyabuswa community. The Siyabuswa Education Improvement and Development Trust (SEIDET) and the Department of Informatics have had a long relationship in terms of research and community development projects that are related to a socio-technical view of information technology.

The following day, the learners from Tugela Ferry were introduced to Dr Jackie Phahlamohlaka. Dr Phahlamohlaka is a subject of the late King Mayisha III of the Ndzundza Ndebele people in Mpumalanga and is a systems modelling expert at the Council for Scientific and Industrial Research (CSIR). He has been involved, together with the University of Pretoria, in teaching the community of Siyabuswa that tradition and science do mix.

The success story of SEIDET and meeting Mahlangu and Dr Phahlamohlaka really inspired the learners from Tugela Ferry.