Exploring the effectiveness of ICT classes on the lives of poor at-risk children

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Abstract

An exploratory pilot study was initiated to investigate the understanding by at-risk youth at Zandspruit of Information and Communication Technology (ICT), and the impact of informal ICT on their lives. No formal research has been done on the impact of ICTs in the lives of the Zandspruit children. This presented an opportunity to pursue research in this area. The purpose of this paper is to report on the results of a pilot study that explored the effectiveness of ICT tutor-mentoring classes on the lives of poverty-stricken at-risk middle and high school children. The paper reports on the ways in which the ICT classes operated as a dynamic tool to instil self-confidence in the children and promote self-reflection and understanding of information and communication technologies. The ICT training had no extended curriculum but comprised simple pre-set computer-based activities and interactive Open Source games. From the perspective of the developed world, the level of the ‘teaching’ was very basic, but to the children it was a novel challenge. Undertaking this preparatory study achieved a better understanding of the holistic needs of the children.

A mix of data collecting techniques was used over a period of two years to both ensure and to test the credibility and reliability of the data. Much of what was discovered from the data analysis was anticipated because of the commonly voiced opinion that a nurturing learning environment promotes effective learning. It was however anticipated that the impact of the ICT learning experiences would be of such a nature that they would be shared with others in the community, but this was not the case. This unforeseen result is being managed by modifying the focus of the ICT activities to inform a future larger-scale project. In addition, this project will be informed by the newly-revealed aspects of ICT relevancy and psycho-social issues in the lives of these children, with specific reference to the Digital Doorway (see Figures 13 & 14).

Keywords: ICT training; Tutor-mentoring; Disadvantaged children in South Africa; Digital Doorway

Rationale

Many of the challenges of this paper derived from the nature of the group of children which the study explored. Children generally are not accustomed to reflecting on their learning; they do not have clearly-formed strategies for learning and tend to follow a lead. Poor children living in informal settlements such as Zandspruit are affected by other concerns – their first priority is to learn how to survive in the reality of the harsh environment of their shacks and dirt streets. Their community is not cohesive and as a result there are many social tensions. For most of these children, the need to overcome such adverse circumstances and acquire physical and emotional security comes before learning concepts that apply in a different, developed world, even though it may be ‘just down the road’. Another difficulty faced by these children is that of having to learn in a second language and deal with ways of thinking and theorising that are outside of their own cultural norms and values. The Zandspruit children thus face many challenges which affect their learning. In light of this, efforts at

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bridging the socio-economic and physical gap by children who live in flimsy shacks and attend Saturday School at a flush, solid university (Monash University, South Africa) are somewhat faltering and tentative. Nevertheless this paper describes a special effort to span some of the learning gaps. It shows how a small group of devastatingly poor teenage learners who participated in informal Information and Communication Technology (ICT) training became more technologically enriched. This was achieved by a tutor-mentoring intervention where the children were individually nurtured. Tutor-mentoring as a method of instruction is not the customary teaching approach in a normal classroom environment but this paper shows how this approach was most effective in this particular situation, as one (of many) expressions show:

I find MONASH UNIVERSITY that tries to improve childrens knowledge and helps them in schools academics such as computers, maths, chess and etc..... MONASH UNIVERSITY as done a lot for me in the last few weeks .When I first came to Monash University I was amazed people here are very friendly and they have that enthusiastic emotion of helping us in other words they want to make a defferance in our lifes.

The difference in the lives of the children through this nurturing relationship was one of trust being built up between themselves and the tutor-mentors. This encouraged the participants to reflect on their experiences without intimidation, as Themba2 stated:

i like to MONASH because they help me with my HOME WORK .For my math work if i can’t understand how to do the work.and i enjoy to be with other childrens that donot have the same knowledge as i do have.I will like to see our feture as we wan’t it’s to be like we wish to be like or our dreams come true because of MONASH.MONASH helped our new policies like doctors; nurses; teachers.

Hope for the future, a strong sense of self-worth and eagerness for self-improvement, are just some of the possibilities the ICT training attempted to instil in the children’s lives. The paper outlines the activities which were undertaken to achieve this and examines the respective outcomes. It describes the tutor-mentoring approach to teaching and examines how this manner of instruction impacts on the youths receiving it. The paper discusses the enthusiasm of the children and their desire for further engagement with computer technology. Data were gathered through observations, the children’s writings, a semi-structured questionnaire and informal conversations over two years, and then analysed. Findings from the study guided us in formulating themes from which we could discover the programme’s strengths and weaknesses in order to determine whether a larger research study was worth pursuing.

**Zandspruit and Learning**

The pilot study took place on the South African campus of Monash University which is located 4 kms west of the informal settlement of Zandspruit (see Figure 1). Both are situated north west of the urban-rural periphery of the Johannesburg metropolis in Gauteng, South Africa. The close proximity of the sites was a reason why Zandspruit was chosen as the research community (see Figure 2).

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2 Names of the children have been changed to protect their identity, unless express permission was granted by the child.
Zandspruit is one of many informal settlements which have formed in post-apartheid South Africa as a part of urbanisation throughout the country. It was established in 1995 when the land was temporarily given to poor migrants who were seeking work in the northern suburbs of Johannesburg. Today Zandspruit has evolved into a vibrant community with a population of approximately 17,000 families - some 50-60,000 people living in an area which has expanded to 3 square km. The people of Zandspruit live in impoverished conditions with an unemployment rate of over 70% and in many cases without access to basic services. There is no running water, electricity, or sewerage system and no brick walls to demarcate boundaries between homes and families. Entire families live in one small corrugated-iron ‘shack’, approximately 4m X 3m in area, where the roofs are held down by rocks and/or wire. Lack of access to social services and to well-resourced schools with computer facilities leads to a widening of the technological gap, expressed as the ‘digital divide’.

In our attempt to address the digital divide challenge and to bring technological opportunities within reach of the Zandspruit community, we heeded the words of Lave and Wenger: ‘(a)ll theories of learning are based on fundamental assumptions about the person, the world, and their relations’. Although this seems to firmly fix learning as a ‘dimension of social practice’ (Lave & Wenger 1991:47) our pilot study examined learning in the context of the individual, mindful that in addition, an individual learns from and contributes to the community in which s/he lives. Outside influences have a definitive role to play in the learning of the individual and by belonging to a community, a unique personal identity is formed by interaction with others in the community (Wenger 1998:146). Educational thinkers come up with new movements, frameworks and theories to explain how learning best occurs or how it should be conducted. One foundational premise is that children actively construct their knowledge through play and experimentation. These are valuable ways of learning (Daiute 1989; Garvey 1977; Herron & Sutton-Smith 1971). Play involves the consideration of a novel combination of ideas. It is a form of mental exploration in which children create, reflect on, and work out their understanding. According to Johnson, Maruyama, Nelson and Skon (1981), and Rysavy and Sales (1991), both play and exploration are self-structured and self-motivated processes of learning. However, when children are tutor-mentored, they are assisted, directed and encouraged to freely discover new knowledge and to share this without fear of intimidation.

The study presented a unique opportunity for an innovative ICT intervention to be undertaken by a group of children, many of whom had had no experience with computers. This study explored the effectiveness of learning through play and experimentation and inculcating what was learned through nurturing. This clearly goes far beyond a traditional computer connected to a network – it encompasses a whole realm of new technologies which are not available to the youth of Zandspruit.
Monash University, South Africa – ICT Tutor-Mentoring programme

The key to keeping educational institutions mindful of the mutual dependency which exists between
them and the broader society is the relationship that exists between any university and its local
surrounding community; it should be both interactive and innovative. Interaction facilitates the
process of community capacity-building by helping impoverished communities identify, assess and
respond to their own levels of awareness and vulnerability in order to improve the well-being and
protection of the children. Community engagement at Monash South Africa (MSA) means an active,
committed, co-operative, creative, innovative and mutually beneficial interaction that advances public
good, with individuals, groups and entities outside of the university, in all sectors of society. The
Monash Saturday School (MSS) is an example of such an intervention which supports the local
community by exposing high school learners to new skills and knowledge through fun-filled
activities. Professor Simon Adams (MSA 2008) stated:

*The community outreach approach extends to bringing youngsters from the nearby
Zandspruit settlement to the campus each Saturday... It restores your faith in what
education is all about. If education isn't to change the world and make it a better place,
then what ... is education for?*

His rhetorical question was answered by Gladys, a thirteen year old participant in the study, who said:
“Education is the most powerful weapon which you can use to change the world”.

As part of the community outreach, MSA students volunteer their time to tutor-mentor the ICT
programme to selected Zandspruit learners. A *tutor*, according to Maitland (2010), is defined as a type
of academic assistant who provides academic support and guidance. *Mentoring* describes the
character and function of a certain type of relationship and offers social and emotional guidance,
counselling and advice. It is characterised by the mentor’s commitment to serve someone and its
developmental function – the growth of an individual. This illustrates the environment in which the
ICT training is undertaken, which facilitates the relationship between the children and the tutor-
mentors. It was evident that the children related to the tutor-mentors as role-models because they (the
tutor-mentors) related well to the children.

The tutor-mentoring situation was beneficial to more than the Zandspruit learners. It was reciprocally
beneficial to the tutor-mentors who shared their ICT knowledge and learning experiences. The tutor-
mentors are international undergraduate MSA students from African countries such as Nigeria, the
Democratic Republic of Congo, Botswana, Zimbabwe and many more. They are from a wide range of
socio-economic backgrounds, ranging from the very wealthy to devastatingly poor rural areas, not
very different from the Zandspruit children. Poverty and its consequences are very much a reality in
Africa and is something of which all Africans are aware, even if not actually living in poverty
themselves. The cultural similarities between the children and the students facilitated an
understanding, a respect for each other’s needs and values, and a trusting environment in which the
freedom for the children to express themselves was encouraged. Gladys affirmed this by stating:

*I enjoy amount of staff +- 20. They express my feelings. They taught me things I did not
know before. It is more fun because its about me. It is educational and fun because I
learn many stuff. It was enjoyable but difficult. They teach things not taught at school.I
love independent learning. It enhances creativity. Its fun.*

The tutor-mentors are young, between the ages of 18 and 24 (see Figures 6 & 7), and could see the possibility for change through leadership. They could envisage a successful future for not just themselves, but for their communities, their nations and their continent. Eddie said that he personally felt “that Africa’s redemption and rise is in the hands of the current generation. I have to say Africa is a sleeping giant, yet to be awakened by its youth” (Mwiti 2007). Mohammed added:

I would love to be a leader in Nigeria or to be in a position where I can make a difference. What I would really like to do is to empower the talented poor people with education. I have this belief that when determination stands, failure can never dismantle the flag of success. If you try, you can achieve -- provided you try. In Africa you have to try and try and try. Failure is not failure unless you stop trying (Aliyu 2007).

The expressed faith that education is in the hands of the current generation gave relevancy to the ICT programme which was introduced into the MSS at the start of the 2008 academic year. It was then that a newly equipped computer laboratory with thirty machines was established and lying idle over the weekend; it was decided to utilise the facilities (see Figures 6 & 7). These dictated the context in which the ICT content and method of learning was undertaken. The academic setting of the programme was awe-inspiring, one where Tshefatso showed his appreciation by saying:

I like to come to Monash because Monash is the best university in South Africa. I like Monash because we learn about computers. I like Monash because it has more computer. We also appreciate it very much because we also learn much more and we don’t have to pay for it.

Free education is so much more than focussing on the financial aspect, it partly encompasses what the tutor-mentoring team were aiming to accomplish. These were to get to know the participants, to build a trusting relationship with them, to engage with them on a technological level, to encourage written and artistic creativity, and to offer a platform for the freedom of expression. The engagement was informal, not a normal teacher-learner approach, but one of imagination, creativity and fun. The programme accommodated 120 children from Zandspruit who were bussed onto the campus each Saturday. Chess, sports, life-skills, environmental awareness and ICT skills were undertaken in three sessions of approximately 45-50 minutes each. A snack was given to the children when they arrived and again just before they returned home because it is well-known that hungry children cannot concentrate. For many of the children it was the only time they ate during the week-end. It made an impression on a number of the children who were very grateful. Amoleng explicitly acknowledged this in his story:

My name is Amoleng, age 12. My school’s name is Masakhane. I am in grade 7 and I like to come to Monash because in Monash they give us something that we don’t have and in Monash they give us food and something that we don’t have at school. I love Monash because we eat something that we like. That is the end of my story.

The ICT training, as part of MSA’s educational opportunity, used informal computer-based activities that were as responsive to the children’s expressed interests and needs as possible. Tutor-mentors (see Figures 6 & 7) supervised the activities, guided by the primary researcher’s experience as an IT lecturer. The tutor-mentors adapted to individual creativeness as the computer-based activities unfolded. The training evolved with the children’s learning and defined the purpose and showed the relevance of the “play with a purpose” premise.

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4 Mr Eddie Mwiti (22), from Kenya, Business Systems IT student. Report: Andrew Shaw
5 Mr Mohammed Aliyu (24), from Nigeria, Business Systems IT student. Report: Andrew Shaw
Tutor-Mentored Participants from Zandspruit

The Zandspruit children are classified as at-risk because they ‘appear to be drawn into a cycle of poverty which is spiralling downwards. This is an indirect measure of the growing human poverty in the province’ (Saunders 2008). According to the United Nations’ Economic Commission for Africa, there are close to 12 million at-risk children in South Africa of which 4.5 million live in an urban sub-economic environment. At-risk children are those who are living in devastatingly poor conditions in a social threat that may lead to a life of impairment. However, with improvements in their social and educational conditions, it is possible that they may be restored to a path of successful development. In South Africa children from impoverished homes and backgrounds often do not complete their schooling as they are required to become the bread winners in their families from the early age of 12. These children are placed at the head of a household, providing for their younger orphaned siblings. These harsh circumstances, however, did not appear to affect the exuberance of the children who attended the MSS. This summation was affirmed by the Community Outreach Officer (Gilbert 2008) who remarked that “The kids are so joyful and energetic, you can just feel it, and they're so welcoming and loving, even given their circumstances”. Outwardly the children appeared resilient and eager to learn, two attributes which accords with Barbarin and Ritchie (2001:253), who found in their research that doing endearing things for others, a willingness to try new things, the ability to focus on a task and to stick with it even when it becomes difficult, and to derive pleasure from accomplishments, show resilience and an eagerness to learn. This was typical of the Zandspruit teenagers.

ICT training was undertaken only by learners in grades 7-12 (see Figure 3) because it was considered they would get more out of the classes and were closer (in age) and nearer to completing school and seeking employment. A total of 107 children participated in the pilot study. Of these, 68 completed the semi-structured questionnaire, supplying demographic information. Attendance registers were taken over a period of nine weeks showing the attendee numbers ranging from 68/107 (63.6%) down to 47/107 (43.9%). The varying numbers of children who attended depended on their health, availability and whether they had responsibilities and/or chores to complete at home. Living in a sub-economic environment has its own issues that impacted on the privilege of attending the MSS which is outside the scope of this paper. The number of participants in each group ranged from 15-35.

The children were arranged into three groups according to their grades at school (see Figure 3) because it was perceived they would be the same age and at the same level of literacy and understanding. This however was not the case because the ages of the children in the grades overlapped considerably (see Figure 4). For example the ages of the children in Grade 7 ranged from 12-15, those in Grades 8 & 9 ranged from 13-17 and Grades 10-12, from 16-20 years.

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Figure 3. Three Groups of Children who completed the questionnaire. Obtained:2009-08-22

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English was the language of instruction and was not the children’s mother tongue. The vernacular languages included Tswana, Xhosa, Sesotho, Setswana, Zulu, Sepedi, Shona, Tsonga and Venda (see Figure 5). No specific African home language is dominant in Zandspruit (Saunders 2008). The tutor-mentors translated from English into the vernacular whenever necessary as they spoke similar languages to those of the children. For example the Botswana tutor-mentors speak Setswana and those from Mozambique understand and speak Tsonga. This was seen to be a key factor in determining the success of the study.

The children attended schools in and around Zandspruit, including Masakhane (Zandspruit), Matla (Kromdraai), Madiba (Kagiso), Cosmo City (Cosmo City), Kingsway (Honeydew), Ferndale High (Randburg), St Angers (Muldersdrift) and Fourways High (Fourways). None of these schools have computer facilities which restricts opportunities to engage with computer technology.

**Study Guidelines**

Ethics clearance for the study was covered by the MSA Community Engagement Office (2007). Each week, after feedback from the tutor-mentors, a new innovative computer-based exercise was devised. Because the activities were held in the university’s networked computer laboratory, we were restricted to the existing Windows operating environment and limited to controlled Internet usage. The reason for this was that the laboratory was one of the university’s teaching venues and care had to be taken to protect additional software from being uploaded, possibly introducing damaging computer-viruses. Independent learning and the nurturing situation was facilitated by means of personal computers and saving completed exercises in personal individual electronic-folders.
The execution of the pilot study focussed on answering four key questions: Is why we are undertaking ICT training important – educational, useful and able to inform the larger study? Is what we are presenting of any relevance – ICT based skills? Is how we are presenting the activities effective – tutor-mentoring? Is where we are conducting the activities affecting the target group – apart from the home environment? These questions were based on the assumption that in order to break the poverty cycle within a person's life, an intervention using integrated learning and skills development is essential. These four questions were instrumental in formulating the pilot study’s aims and were used to develop and ensure reliability of the larger study. These were to:

- offer a venue and facilities that encouraged ICT learning and boosted confidence;
- offer specific skills training which poor children would otherwise possibly not receive;
- engage with impoverished children through ICT training;
- empower the local youth and consequently their community through creativity and skills development;
- investigate the importance and relevance of ICT in the lives of the youth;
- ascertain what ICT skills impoverished high-school children need to know;
- determine how the tutor-mentors facilitate the children’s learning process;
- discover what affirms the learners personally, educationally and socially;
- identify what the children enjoyed most about attending the ICT training;
- identify the most useful activities and applications – for use in a larger study.

**Research Design and Techniques**

The research design was a qualitative case study which took place in the natural setting of a private higher education institution in South Africa. The articulation of attitudes and opinions ‘on the ground’ enabled a Grounded Theory approach. Grounded Theory assumes that concepts, insights and understandings are developed from the subjects of the research which in this study were the Zandspruit children. It was intended that the Zandspruit participants impart much useful knowledge about themselves that could be elicited gradually, equitably and sensitively. With the Grounded Theory approach new perspectives and opinions are taken into account throughout the early stages of the study’s formulation. Data analysis is iterative, taking place as understanding aggregates. The primary researcher was an integral part of the study, remaining available throughout the sessions, not aloof from the participants, but interacting with them as an ‘encourager’, boosting self-confidence and affirming choices.
This study explored openly and without preconception what the children’s attitudes were to learning and the concerns about ICTs. It also sought common understandings of key concepts, including ‘learning’. There was no prior research and no reported literature to support the investigation. The use of tutor-mentors as facilitators allowed for all types of responses, including negative reactions, and unexpected observations. Research limitations included the language barrier which restricted the free flow of information, possible misunderstanding of innocuous questions which may have been perceived by the children as interrogatory, and the children’s eagerness to please.

During the course of the two-year pilot study, many hours of observation, focussing on the dynamics of the class, their interactions (social) and engagement with the activities (participation) were undertaken. At the end of the study, a semi-structured questionnaire was drawn up to gather as much rich data to support the supposition that tutor-mentoring an ICT training programme would impact beneficially on the lives of the at-risk learners. The questionnaire was administered by the tutor-mentors who had previously undergone rigorous interviewing-skills training. Both closed and open-ended questions were used. The questionnaire consisted of two parts. Part 1 consisted of basic demographic details such as age, grade at school and name of school. Each question in the second section comprised two parts, namely, a 5-point numeric scale which measured the possible impact of the computer-based activity, 0 being ‘Low <40%’ and 10 being ‘High >75%’ (see Tables 1 & 2). Within each of these questions, an open-ended question was posed to determine the reason for their numerical choice. This was considered necessary for the study because of language difficulties and the low literacy levels. No psycho-social or personal questions were included but in order to collect as much rich data as possible, the tutor-mentors engaged in informal conversations with the children. The principal methods of data gathering were from the children’s written words, the questionnaire, observations and conversations. These were used to discover the children’s computer-activity preferences, to measure the degree of possible impact, and how best we could play our part in narrowing the digital divide and bringing technological opportunities within reach of the Zandspruit community.

Activities

All the activities undertaken in the computer laboratory were to get to know the Zandspruit participants better and to assess the impact (if any) that the ICT tutor-mentoring was making in the lives of the children through our nurturing. The emphasis was not on curriculum content. The activities, in their endeavour to teach new technologies and their outcomes, overlapped considerably. The collated data were coded and analysed. Analysis of the coded data identified the following significant themes:

- Theme 1: Inculcating technology in the learning process;
- Theme 2: Developing a trust-relationship;
- Theme 3: Encouraging creativity;
- Theme 4: Freedom of expression;
- Theme 5: Instilling confidence.

Theme 1: Inculcating technology in the learning process.

This was a key part of the ICT training. We exposed the children to the Microsoft Office software that was permissible in the networked laboratory. In one instance we experimented with using the same computer software, Microsoft Office Powerpoint, over an extended period of 6 weeks. The aim was to observe the children’s growing familiarity with the software and to explore whether this built self-confidence (cf. Theme 5). We investigated what the children found relevant enough to include in their
‘personal’ portfolios, since it defined what ICT skills the learners needed to know. The tutor-mentors reported that the learners “were extremely nervous to explore powerpoint on their own”, adding that some of the younger children “struggled with the powerpoint content” because “it was new to them”. We gave the children an opportunity to present their work to their peers at the end of the 6-weeks, which we video-recorded. These recordings were not used as part of the data collection. Bella proved the success of inculcating MS Office Powerpoint over a prolonged period when she said:

*I love creating a powerpoint; You can write things you can wish for your friend; You can enjoy different things; Some stuff are hard to learn; powerpoint is easy to work with; I like creativity; It was fun for me.*

We learned from Lebogang that presenting was both fun and educational. He stated: “I *love* doing my presentation because im learning something; And i have forgeten some waer at MONASH they teach us so many Things and love computer”. Spending a considerable amount of time using the same software significantly contributed to the improved learning of technology, as expressed by Tshepo:

*I has a lot of features that enlighten my work; Nice for presentation; Because I know how to use it; You learn a lot about strengths and weaknesses and you’re able to work on your strengths; It was good to learn but wants more practice on the technical material.*

In acting out their presentations the children innocently disclosed valuable information about their ICT training and gave insight into what was needed for both educational and personal affirmation.

**Theme 2: Developing a trust-relationship.**

In developing a trust-relationship we were able to explore what nurtures the children personally, educationally and socially. It also helped to establish whether the contrasting environment between MSA and the harsh sub-economic Zandspruit environment hindered the holistic development of the children and whether tutor-mentoring as a teaching method was successful. This success was affirmed by Joshua.

*My name is Joshua, age 14 in grade 8. I find monash university that cares about children lifes and tries to improves knowledge and helps them in academics such as computers.I like comin to monash becuse we can trust the people here becuse they care about us.*

Furthermore, with a trust-relationship prevailing in the computer lab, the children were freely able to express what they liked and/or disliked about coming to MSA. These expressions were deterministic in measuring the degree of impact, as Agnes added:

*i like coming to monash because we learn more about chess or computers because at my school we don't have things such as computers. but at monash we do to have some computers sometimes we write some stories or some scripture.*

It was through these stories and Agnes’ mis-quoted scripture verse: “*monash is my hidingplace, they will protect me from trouble and surround me with angels*” [Ps 32:7] that lent credibility to the expressions of feeling safe, worthy and important. These ran like a thread through all the children’s words. It is notable that a trusting relationship between the learners and the tutor-mentors was enhanced by allowing access to unique learning experiences using ICTs which cost the children no money, and which allowed them to dream and to venture. They explicitly acknowledged the comfort of the generous food, but at the same time they acknowledged the fun that accompanied the new learning. It provided them with insight as expressed by Mmamela:
People are living the country to hunt for greener pastures at the foreign countries. Their complaints are that the South African government is struggling to pay them more wage, they pay them same amount as the incompetent leaning clue less nurses. Their comparing us with those who are beginners who haven’t been through sickness and hunger. So monash knows about hunger because they give us food and something that we don’t have in school.

This is an example of the discernment that a trust-relationship has the ability to extract, encouraging the freedom of expression (cf. Theme 4).

**Theme 3: Encouraging creativity.**

Encouraging creativity enabled us to determine whether the local youth were empowered through their freedom to express themselves creatively which facilitated the learning process. Elizabeth affirmed the importance of creativity in successful learning when she said: “I like creativity because it has a lot of features that enlighten my work”.

More examples of such affirmation follow. The children were asked to create a Mothers’ Day card for their mother or someone they considered their mother. From the wording on the cards (see Figure 8) it was discovered that many of the children were living with a carer or in a child-headed household, because the cards were not addressed to ‘Mother’, but to “Dear Agnes”, “Dear Palesa”, “Dear Asnath” and others. This is substantiated in the Children Count – Abantwana Babalulekile brief (Meintjes, Hall, Marera & Boulle 2009) which presents new evidence drawn from nationally representative household surveys in South Africa. This brief shows that in South Africa today, child-headed households are increasing with approximately 122,000 child-headed households. Child-headed households are at risk of having to cope not only without adults, but also with poorer living conditions. The endearing wording on the cards showed the gratitude of the children towards their carer.

**Figure 8. Mothers’ Day cards. May 2009.**
We experimented with creativeness by including mathematical literacy in activities. In one example, the children were asked to imagine they were shop-owners, to devise a suitable shop-name and to create an invoice by listing items sold with corresponding amounts. This activity explored proficiency in numeracy and gave us insight into future aspirations (cf. Theme 4). While these activities encouraged creativeness, they also revealed a lack of self-confidence in a number of participants. This was demonstrated when they were asked to sketch themselves, using the MS Paint tool, under the heading: “This is me!!’. They found it difficult to commit to an image and a great deal of time was spent erasing, which is a clear indication of low self-confidence. Perhaps the reason for their lack of self-confidence was because they had no real understanding of how to project themselves onto something outside of the realities of their harsh circumstances. However, the few ‘pictures’ (see Figure 9) that were completed contradicted our assumption of commitment. The girls agreed that the activity was enjoyable with expressions such as: “I want to learn how to draw pictures”; “I want to learn about colouring pictures”; “Adding pictures in computer I like it”; “I want to learn about painting”; “I want to draw a lot more”.

![Figure 9. Personal Images. “This is Me!!”. June 2009.](image)

From our observations it was evident that the children could not easily remove themselves from the reality of their home environment (their real-life situation of poverty). They found it difficult to be imaginative and creative, and to fully engage in the fantasy of their activity. The learners thus took a long time to develop their ‘unfamiliar’ ideas which they managed after a great deal of prompting from the tutor-mentors.

Creativity was thus encouraged by means of a number of varied ICT tasks, including helping the children to comprehend the etiquette and heart-warming expression of sentiment through greetings cards, to understand the exchange of goods and services, to allow themselves fantasy and escapism in relation to future job roles, to alert them to the power of technical know-how, to understand the value of planning ahead, and to articulate a strong desire to help others. The self-images are refreshingly glamorous, colourful and original. Despite their initial hesitancy, it was apparent that the children enjoyed expressing themselves through these activities. We were not sure whether they knew what the words ‘being creative’ meant, but the evidence showed an innate understanding of the concept as repeated by opinions such as: “it enhances creativity”; “it promotes creativeness”; “I love to draw in paint, it makes me creative”. These activities were clearly linked to the 4th Theme.
Theme 4: Freedom of expression.

Our assumption that people cannot express themselves freely if they do not have the self-confidence (cf. Theme 5), led to activities that were aimed at encouraging the children to express themselves freely and anonymously in their writing. These activities gave insight into whether poor children believe that their lives can have other meanings, their future aspirations need not be limited, they have potential and are capable of having a career. The children had to imagine they were business entrepreneurs. Some of their aspirations were very grand others may have been unrealistic, based on inappropriate role models who may, for example, be criminals, or on older (yet inexperienced) siblings who stand in for their deceased and/or uneducated parents. Temba pictured himself as owning a motor car spare parts store: “Exclusive Specials in Mxo Store”. Others aspired to be hairdressers, dress-makers, sound engineers, economists and many more. One young entrepreneur’s business was entitled “Wings Computer Shop”. He advertised that “We download computer games and music; We create websites; We provide free SMSs and We repair computer, ipods, psp’s, chips”. Another fixed electrical appliances. The services he offered were: “Cellphones; Televisions, radios; Computers/laptops; Mp3 & Mp4; DVDs, home theatres, VCRs; Home appliances; Radios”. When it came to career choices, Tshefatso aspired to be a pilot:

When I finish school I want to go and study to be a pilot. I think is a good job because many of my friends don’t like it. To be a pilot you have to be tall and thin and beautiful as I am. I like being a pilot because I want to know how its feel to be on top of the world. What I most of being a pilot is that you go in different country.

Samuel had dreams which he considered would be realised if he continued at MSA: “so i want the monash members to help me with some of the things that i dont know so that I can rich my dream”. Other dreams were simple, but profound: “A bright future; A excellent career; A leader who will empower people to make excellent decision; Be a leader; Be a role model; Develop my community”. Golden wrote that “In ten years time I want to see my self as a professional disc jockey or be a IT Engineer. I want to study one subject at Technics School at Johannesburg and study IT at Monash University”. These quotes clearly contradict the research (Tadria 2005) done on children from low economic backgrounds which claims that confined thinking refrains from allowing them to imagine themselves as successful business entrepreneurs and they tend to think that their futures lie in crime and its consequences. The Zandspruit children live with crime on a daily basis but appeared determined to avoid this trap. Tshepiso showed his willingness to be proactive by saying: “when I grow up I want to be a Policeman. I would like Monash to teach me a lot”. Another area of great concern to the children was that of HIV/AIDS. Whole families are affected by this pandemic and many of the children voiced a desire to combat the scourge of HIV/AIDS in their community. Mafuto’s comment is an example of the feelings of many of the children: “I would like to do medicine; I would like to be a doctor; I want to increase the number of doctors; To help developing communities; And to find the cure for HIV /AIDS”.

When the children were asked to imagine they were Journalists and to write an article for a newspaper/magazine about a ClipArt picture, they produced insightful work. They were to insert a table into a word document, include a ClipArt picture in the table and write ‘a story’ about the picture. One article was particularly passionate (see Figure 10) and gave insight into the circumstances under which the children live.
Some children were hesitant to express their thoughts and feelings freely in their writing. This was seen in their ‘letters to their friends’. These appeared impersonal and inclined to read like Curriculum Vitae. They contained mostly demographic data such as name, age, address and school attended. While a few of the letters added a more personal touch by including music they enjoyed listening to, there appeared to be no expressions of connectivity or relationship. This reluctance to foster relationships or connect personally with other people is possibly because of their instinctive ‘need to survive under adverse circumstances’. Therefore, sharing secrets might be something they do not have the luxury of doing.

The activity of ‘creating a wish-list’ was undertaken based on the assumption that what people wish for someone else, is often what they wish for themselves. Abram’s comment revealed the truth of this:

I wish my friend to be a star in school; I wish my friend when he grow up he must buy a car and I want he must be nice; What is wish for my best friend id to have a successful career and I hope he chose a good career path an for my self I’d wish my self the same as I chose to be a Sound Engineer which will be a third step for being a Disc Jockey(DJ).

Elizabeth expressed a desire for her close friend to be lifted out of the poverty cycle and for her to be able to achieve her life-goals: “I wish if someone but her parents to buy for her everything she need or want; What I wish for my friend is that she must achieve her goal And I wish a long life to her enemies so that they can see that she is really achieving her goals”. She also wished for her friend to be protected from harm by writing: “The last thing is that she must not have other friend because they can be bad to her”. Avoiding bad friends appeared to be recognised intuitively by most learners and is perhaps another result of having to learn ‘survival techniques’ from an early age.

The values of independent self-expression were not well understood. Formal texts which are familiar to academics and students, and to more privileged children, such as letters and messages to friends, probably left these learners somewhat bewildered. They are not accustomed to ‘having a voice’; to have the freedom of expressing ideas. Nevertheless, the learners expressed some very instinctive basic emotions of significance in multiple formats through the various activities. Journalism, writing letters and making wish-lists for friends were activities which gave us opportunities to get to know the children better (cf. Theme 2), to encourage self-expression (cf. Theme 4) and creativity (cf. Theme 3).
Tebogo expressed the impact of this “writing” activity by saying: “I love creating nice pictures and you can write things you can wish for your friend. Its fun”.

**Theme 5: Instilling confidence.**

Instilling an air of confidence into the children and encouraging them to have high aspirations was key to the study. This was explored partly by observing interactive ‘Ubuntu’ game-playing. Ten educational games were uploaded onto CDs. These included Chess, Chinese Tetra, Bubbles, Nibbles, Robbots, Four-in-a-row and others. They were played individually, not collaboratively, over two weeks to observe changes in self-confidence levels whilst engaging with the games. From the start, observed body language clearly showed that the children did not engage with the games, appearing detached. Many of the boys sat in a half-lying position, slouched low in their swivel chairs, turned away from the computer monitor, playing the game with one hand only, the other arm hanging over the opposite arm rest. Only those games familiar to the children, such as Chess and Bubbles, were played. The tutor-mentors encouraged the children to explore other options but they were comfortable with what was familiar and achievable, which clearly highlights their lack of self-confidence. The boys indicated they enjoyed some of the games, but would have preferred interactive games with “killing”, “fighting”, “fast cars”, “games with speed” and “lots of blood”. When asked how they knew about those games, one child laughingly replied, “I have played it on my friend’s phone”. Access to ‘violent’ games is clearly not a problem for poor children however this raises the concern as to whether the fantasy-world of these games diminishes the seriousness of the high crime statistics of this country. A few children however enjoyed the ‘Ubuntu’ games, which contradicted our observations. One example of this was Tshepo who said: “I want to know more about computer games\sound”. Another learner said: “I want more to play soccer on the computer”; and another wrote that he: “want[ed] to play song video ,movies and games”. Mono said he “want[ed] to play games like cross word puzzle”, and just not the educational games we gave them.

There are glimmers of evidence that computer games which challenge intellectually are of interest, but the appeal of speed, blood and gore is stronger for many, suggesting bold brashness and social influences rather than balanced self-confidence. The power of ICTs to provide popular entertainment, rather than demonstrable learning in traditional ways is well shown by the learners’ comments. Data about self-confidence are ambivalent. However, based on the evidence, building self-confidence and inculcating technology through innovative fun-filled activities, yields more effective results for ICT learning than a well-planned curriculum.

**Additional Contributing Activities**

At the end of the two-year study the children were asked to write what computer-based activities they would like to undertake in the future. This activity addressed the importance of a ‘bottom-up’ approach to teaching and learning – listening and taking cognisance of what the learners wanted and not of what we thought they might need. We used the responses (‘What I want to do in the ICT classes in 2010’) to assess the impact of our endeavours. One child intimated that all the activities had made an impact: “I want to know everything about computer and understand it”. Other children were more specific, expressing the wish to learn more about opening a small business, “I want to do a business” and “I want to type my cv”. Others reiterated activities that we had covered over the past two years by writing comments such as: “I like to right happy mother;sday”; “I want to learn how to make a birthday card”; “I wan to learn typing”; “I want to do power point”; “How to layout pages an power point”; “I want to learn how to use excel”; and “I want to write a letter to my

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7 ‘Ubuntu’: loosely translated means ‘humanity’. It means that ‘I’m only me because of you and you are only you because of me’ (Open Sources software).
friend”, which clearly showed the value that the computer-based activities were having on the learning process.

It appeared that the children wanted some form of recognition of accomplishment by their requests for some kind of formal assessment: “I want to write a test in classroom”; and “To write the exams”. Samuel wrote “I to know about how to use internet and write the exam in this class”. This was supported by Andrew: “I want to lern more about computers and get certificate. I want a challenge test from a computer”.

Clearly it was important to ‘prove’ they had achieved something others had not, and to boast about their achievements to others who doubted them. Interestingly, the challenges of testing and assessment were regarded as the norm, and not seen as threatening, but rated as highly desirable. Success in study and career is ranked high, reaffirming the adage held dear by poor black communities that a good education is the road to success and therefore education is highly prized.

Findings

Since convenience sampling was used for this study, the findings do not claim to be representative. The participant sample (107 in total) was not broad enough to draw statistically significant conclusions and therefore cannot be generalised. The aim in this study was to understand the relationship of the whole child to ICT in a tertiary educational environment. Qualitative methods are powerful at identifying in-depth understandings of revealed feelings, attitudes, experiences and opinions. Motivation, for example, varies from person to person and even within an individual at different times. The understandings generated by this project (as suggested by Opie 2004:5, 74) with the Zandspruit children may provide a useful platform to move forward to other in situ projects.

After analysing the results from the first (of two) questionnaires, it was found that 30% of the respondents did not live in Zandspruit. We considered that statistic too high to regard the findings as reliable, therefore a second questionnaire was administered. In the second questionnaire the questions were more refined in an attempt to elicit more accurate reliable responses from the children. The results from the second questionnaire showed that 93% of the respondents lived in Zandspruit with 7% staying there only on the week-ends, which was a more relevant participant sample for the pilot study.

A summary of the responses obtained from those questions which sought to explore the effectiveness of ICT classes on the lives of the at-risk children from Zandspruit are reflected in the tables below (see Table 1 & 2). The responses are condensed and summarised on a 3-point scale (derived from the original 5-point scale). In addition, the tables reflect the results of the pilot study’s examination of the children’s learning in the context of the individual and the extent to which they interacted with others in their community (Wenger 1998:146) by spreading (and/or sharing) their ICT knowledge and what the community’s perceived reactions were to this. We addressed these challenges by investigating how much the children talked about their experiences and shared their newly learned computer skills with others in the community. This provided insight into the success of our attempts to narrow the technological gap (digital divide). Based on the responses, close to two-thirds of the children talk about their MSS experiences, yet this is perceptively unknown by their community (see Table 2). From this we realise that we need to re-think our motives and strategies for using the at-risk children to assist in narrowing the digital divide in their community.
How much did your **confidence improve (increase)** after doing computers at MSA? 75 22 3
How much has your **schoolwork improved** since you started coming to Monash South Africa (MSA)? 73 22 5
How much of what you have learned at MSA **helps with your schoolwork**? 78 18 4
How much do you **talk about** the Monash University Saturday School (MSS) to other people in Zandspruit? 61 17 22
How much do you talk about the Monash University Saturday School (MSS) to other people in Zandspruit? 59 27 14

Table 1: Results of questionnaire: 13th March 2010

<table>
<thead>
<tr>
<th><strong>How much has your confidence improved after doing computers at MSA?</strong></th>
<th>High (&gt;75%)</th>
<th>Medium (50%)</th>
<th>Low (&lt;40%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much has your <strong>schoolwork improved</strong> since you started coming to Monash South Africa (MSA)?</td>
<td>73</td>
<td>22</td>
<td>5</td>
</tr>
<tr>
<td>How much of what you have learned at MSA <strong>helps with your schoolwork</strong>?</td>
<td>78</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>How much do you <strong>talk about</strong> the Monash University Saturday School (MSS) to other people in Zandspruit?</td>
<td>61</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>How much do you <strong>talk about</strong> the Monash University Saturday School (MSS) to other people in Zandspruit?</td>
<td>59</td>
<td>27</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 2: Results of questionnaire: 17th April 2010

When the children were asked to compare their perceived “**cleverness**” to others in their community (see Table 1), the results showed that there was a significant difference in the “**Intelligence capacity**”, which could possibly be interpreted as arrogance. This is supported in the findings which show that non-attendee children are jealous (see Table 2) of the attendees.

When the children were asked what the **most valuable** (educationally enhancing) computer-based activity they had learned at the MSS (see Table 3), the following choices were noted.

<table>
<thead>
<tr>
<th><strong>What is the most valuable (educationally enhancing) thing you have learned by using the computers at MSA?</strong></th>
<th>Writing</th>
<th>Internet</th>
<th>Playing Games</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much have you <strong>shared</strong> your computer skills with others in the community?</td>
<td>44</td>
<td>20</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>How much are others (in the community) <strong>jealous</strong> that you come to MSA?</td>
<td>41</td>
<td>2</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>How much have you <strong>talked</strong> about the MSS with others in the community?</td>
<td>49</td>
<td>20</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>How much have you <strong>learned</strong> about the MSS with others in the community?</td>
<td>62</td>
<td>20</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>How much is your <strong>schoolwork improved</strong> since you started coming to Monash South Africa (MSA)?</td>
<td>85</td>
<td>10</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>How much did your confidence improve (increase) after doing computers at MSA?</td>
<td>75</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: 13th March 2010

Clearly, using the computer for writing purposes such as writing letters to friends, Mothers’ Day cards, wish lists and journalistic articles had made the most significant impact. The children supported their “**Writing**” choice by saying simply that it “**improve[s] my grammar**”; “check[s] my spelling mistakes”; “teach[es] how to type an essay”; “gives me spelling options to words I didn’t know how to pronounce”, and many more. These reasons may be viewed as immaterial to ICT trainers, but to the children these issues impact significantly.

The responses to the “**Internet**” choice would possibly have been higher had we used the Internet more extensively. However, it was enough to get a 28% response rate and was supported by comments like: “**ideal for school research**”; “I can research on my own”; “I now know where to access games”; and “you can come and research anything you don’t understand”. We encouraged
self-exploration by teaching the children how to effectively use an Internet browser. Self-exploration without collaboration appeared to be an exercise in stimulating enquiring minds. Even though the use of the Internet was restricted, the impact of this activity was revealed through the expressed need to discover more: “I want to learn how to find information on the internet. I want to learn how to have access to information about different countries. I want to find more about international and local celebs”. Joseph’s reason for wanting to further self-explore was “to use internet, because I want to know password”. Samuel wrote that he “want[ed] to find information. I need to learn how to get to the internet”.

Teachers in the community schools “do not ask their learners to do their homeworks using the Internet” because, as much as Internet access and usage is growing in South Africa, broadband charges are high and unaffordable to poorer communities. Teachers don’t develop their curricula to include Internet-dependent activities as this would disadvantage some learners. We underestimated the children’s want for information, what the Internet offered and their need to communicate with the outside world, as expressed by their requests: “To be able to chat on line”; “I want to have my own e:mail”; and “I want to know how to email my friends, my family”.

The dynamics of the children’s social structure were evident throughout the children’s writings and are a major contributing factor to the impacts made on their lives. Although the children appeared to be individualistic, they are intrinsically embedded in a dynamic social structure. This was evident from the individually-played ‘Ubuntu’ games. These should possibly have been collaborative. The “Playing Games” option was possibly lower than expected because the pilot study focussed more on assessing the engagement with game-playing rather than the game itself. Playing games on the computer is a big attraction for the children because of their “entertainment value” and simply because “I’m into games”. They stimulate reflexes, hand-eye co-ordination and allow a fantasy world of fun and make-believe to be explored. For unsupervised child computer users this is certainly the preferred computer-based activity which (debatably) detracts from any formal educational benefits (Vigdor 2008).

The “Other” option was selected by children who substantiated their choice with comments such as: “Everything about computers I was taught” (see Theme 1) and “Powerpoint presentation, able to express myself” (see Theme 4). Evidence of pride and ownership emanated from the presentations.

Various questions were posed in an attempt to investigate whether the study’s aims of empowerment, affirmation, relevance and importance of ICT in the lives of at-risk youth were realised: What difference has coming to MSA made to your life? The responses to this question were diverse. These were reflected by the statements: “I’ve learned to study on my own every day”; “I’ve learned how to study effectively on my own and be independent”; “Improved my computer knowledge”; “Learned to type more faster on a computer”; “I’m computer literate now”; “Gaining new knowledge from the computer”; “Computers have increased my Intelligence capacity”; and “I now can write an essay, add negatives and positives and manage my study time”. The evidence shows that the MSS inspires and motivates the children to work harder at school: “I work harder at school after coming to MSS”. The programme highlighted the importance of their education, as one child wrote, “Education is the key to success”. A few more examples
illustrated this: “Taught me to be serious in learning and that I can make it in life”; “Improved my understanding and importance of schoolwork”; “I’ve now become a new person, I even have a study timetable”; “Upgrade my schoolwork and learn new things in computing”; “My homework has improved and confidence”. The success of the children’s increased diligence at school was reflected by the comments: “I am understanding better at school”; “Am quite better at Maths”; “I always do my homework everyday”; “I’ve achieved a lot in my schoolwork”; “Improved my skills, marks at school up by 10%” and “At school I learn how to handle things”.

Many of the responses reflected the improvement in their own self-confidence (see Theme 5) : “I gained self-confidence\high self-esteem”; “More serious about my education” and the programme has “Given me a positive attitude towards life”; “More confident in class”; “More focussed at school” and the children have become more “motivated and know much better than before”. This was supported by comments of seeing a brighter future for themselves: “I know what or where I see myself in the next 5 years”.

The children indirectly acknowledged the sacrificial role of the tutor-mentors and what the trust-relationship (see Theme 2) meant to them. A few examples included: “To respect other people”; “Given more responsibility”; “Meeting the tutor-mentors”; and “Acquired more educationally and meeting new people”. In addition we received comments of distractions from the boredom (see Theme 4) of sitting at home on Saturdays: “Doing something on Saturdays, not sitting at home – occupies me”; “Saved me from getting bored on the week-ends and I see a better future”; “It kept me from being nasty at home, believe me I was nasty”; and “It makes my life to become better”.

The following question was posed in an attempt to investigate our success of inculcating technology into the learning process (see Theme 1): If you could invent your own computer-learning-device, what would it do best and/or most fun for you?

Apart from the very many responses about inventing games, having 24-hour access to the Internet and chatting to friends, we received some insightful (and amusing) comments from the children about their perceived inventions. These included: “Something to help with Natural Sciences, Maps and Historical backgrounds”; “It will be a learning class were students attend lessons via the computer and don’t have to see the scary teacher”; “Knowing how to learn faster”; “Security Devices – to protect the owner when stolen”; “Make a website that will give access to advantaged kids technologically kind of quiz” and “Maths programs”.

Further evidence of a strong sense of pride and ownership was revealed when each child was given a scrapbook containing their finished work (see Figures 11 & 12). Gratitude for these was acknowledged: “I need the people in MONASH to take us another photos”; “I want to getmy picternextyear”; and “I want to have my own folder”. Ownership of knowledge and material items is a luxury for someone living in an environment with no demarcated personal boundaries. The scrapbooks however, were in some small way instrumental in providing this luxury, facilitating reflection and showing recognition of accomplishment.
Based on the findings three significant areas of impact were evident: self-confidence, schoolwork and attitude towards education. We realised however, that in order to effectively assess the full impact that the ICT classes are making on the lives of the at-risk children, we needed to spend more time evaluating the children. In addition, the issue of community inclusion needs further investigation. From the reports and the informal conversations with the children we have some emerging data about community reactions. A little over half (53%) of our participant sample did share their experiences with others in the community – but with negative consequences. It appeared that the other children “were jealous” of them attending the MSS and were spiteful about it, saying “you only go there for the food”. The avoidance of communication with other community members might be because of the instinctive desire to exclusively own new knowledge under the threat of it being usurped if shared. This feedback was a concern because a large part of the pilot study was to assess whether the tutor-mentored children would engage (on a technological level) with their community. Clearly this outcome indicates a need for appreciation of the consequences of ICT training which requires further addressing.

## Conclusions

Impact evaluation, being the most common type of evaluation, was used in this study to establish causality between the ICT intervention and its outcomes. Based on the argument that evaluations can measure impact, continuous outcomes and effectiveness⁸, evaluating the findings from the pilot study revealed pertinent information which clearly showed validity and reliability. The findings determined that the programme in question directly caused the observed changes in the children and we can therefore say that these changes would not have happened without the intervention. The ICT tutor-mentoring training achieved its objectives and thus it was worth the investment of our time and energy. We are aware that a weakness of many impact evaluations is that their results are limited to a specific point in time. Programmes are constantly changing. Therefore, continuous evaluation techniques will be adopted in the future to collect and analyse outcome information on the children. In this way stakeholders can learn from the outcome data, make adjustments and see the consequences of the children’s responses over time.

There is no doubt that the children who attend the MSS live in a harsh unforgiving environment. Their lives and those of their friends and families are surrounded by some devastating realities. Admittedly not enough is known about the children, their cultures and individual life circumstances to communicate fully with them. However, what has emerged from the study is that the upliftment of

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⁸ [http://www.hhs.csus.edu/HomePages/CJ/GutierrezR/PlanCh7.htm](http://www.hhs.csus.edu/HomePages/CJ/GutierrezR/PlanCh7.htm) . Retrieved 2010-08-13
poor children can be achieved by means of an ICT tutor-mentoring intervention. Through trust, commitment and nurturing, freedom of expression and creativeness are established resulting in a sense of pride and the hopeful glimmers of self-confidence. The phrase 'sit still while I instil' is no longer seen by educationists as an acceptable educational philosophy. It does not explain how people learn or how they should be taught. Children “need to be participants in their own education and communities need to participate in the education of the young” (Maitland 2010). Children are not isolated individuals but part of a greater community and in an effort to bring technology learning to the community of Zandspruit, not only is our tutor-mentoring intervention being considered, but an extra-ordinary innovation, a free-standing computer kiosk called a Digital Doorway (see Figures 13 & 14). This was installed at Emthonjeni, the community centre in Zandspruit (see Figure 1) in February 2010.

The idea of the Digital Doorway (DD) is to freely allow the community to experiment unsupervised with computer technology. The theory of unsupervised use of the DD is based on the assumption that people have the inherent cognitive ability to teach themselves computer skills with minimal external intervention⁹. However, what is clear from the pilot study, is that because ICT learning and practice with impoverished children is often driven by people and organisations with good intentions but no real understanding of the needs of the community, finding solutions that bridge the digital divide in these communities is often difficult because it is not just an issue of hardware and software. As is known from the widely-used work of Rogers (2003), innovations - such as the DD -- will only be used by the community if they are perceived (by that community) as relevant and beneficial and having value for them personally.

A challenge that comes from this pilot study is for enterprises such as the MSS to work in cooperation with impoverished communities, (e.g. Zandspruit), to find solutions that give people ownership of the enterprise (in this case computer technology) and allow them to see that they have a personal stake in their learning and that of their children; that they have the right to full control. A recommendation that comes from this pilot study and one that will be considered for the future larger-scale project is to build a sustainable replication technological-adoption model that could possibly be taken and used effectively with other similar poor communities.

We can conclude by saying that a well-planned tutor-mentoring intervention provides an effective environment for successful ICT learning. The implementation of such an intervention is critical to the successful design and development of the larger-scale research project, focussing on DD usage. We suggest that the dispersal of ICT knowledge throughout an impoverished community results in

accelerated learning, better understanding and a more fluent use of computer technology such as the DD. The optimistic notion of youth dispersing their ICT knowledge and understanding throughout their community, and it being adopted by this community, is one that must be pursued in the future larger-scale project.

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