IST-Africa
IST-Africa 2015 Conference Proceedings
Paul Cunningham and Miriam Cunningham (Eds)
IIMC International Information Management Corporation, 2015
ISBN: 978-1-905824-50-2

How Lessons Learnt informed the Development of an Implementation Framework in an ICT4D Initiative

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Abstract: The purpose of this paper is to provide an overview of how an Evidence-based implementation framework was developed through the implementation of an ICT4D project in the Eastern Cape Province of South Africa. The framework was developed over a period of three years through five phases. Each phase represented a specific point in time and the objective was to create a platform to enable widespread participation and collaboration between multiple stakeholders in a rural school district that has the buy-in of key stakeholders and has demonstrable impact on education and quality of life in the region. After every phase the framework was adapted to accommodate the lessons learnt. The most important lesson was that it was not about the technology but about empowering the people to take ownership of their own destiny.

Keywords: Implementation framework, ICT4D, design science research, lessons learnt

1. Introduction and background

The Evidence-based implementation framework was developed to guide the way in which one type of technology (mobile tablets) can support and enhance teaching and learning in a specific resource constrained environment in South Africa. This intervention is coined as the Information Communication and Technology for Rural Education Development (ICT4RED) initiative, which is a large-scale pilot (over 3 years) that tested the use of tablets in 26 deep rural schools in the Nciba school district in the Eastern Cape Province of South Africa.

The macro-economic perspective of the area is one of few economic opportunities, high unemployment, low incomes, a shrinking population of economically active people and a growing number of school-going youth. This area is regarded as a resource constrained environment. A resource constrained environment, for the purpose of this paper, is best described by Anderson, Anderson, Boriello & Kolko [1] as environments where there is low-income communities and low bandwidth. These environments provide unique constraints (e.g., cultures) where people are unfamiliar with or afraid of technology, environments where power and network connectivity are scarce and expensive.

The pilot extends to include 3 senior secondary schools (Grades 10 – 12) and 23 junior and senior primary schools (Grades R to 9) [2]. The challenge was to introduce technology (in this case tablets and other supporting ICT infrastructure) in ways that could improve

teaching and learning, support sustainability beyond the initiative and ensure true integration into existing education processes, whilst managing very real logistical and infrastructure problems. This is a challenge that can be seen as the *Holy Grail* of ICT in Education initiatives in rural areas.

This initiative was part of The Technology for Rural Education Development (TECH4RED) research programme which aims to contribute to the improvement of rural education via technology-led innovation. It was initiated by the Department of Science and Technology (DST) in collaboration with the Department of Basic Education (DBE), the Eastern Cape Department of Education (ECDoE) and the Department of Rural Development and Land Reform (DRDLR) in South Africa. TECH4RED is applying a range of technology-intensive interventions, including initiatives in ICT, nutrition, health, water, sanitation and energy to determine the extent to which the programme will enable positive contributions at all levels and spheres of influence in the school system [3]. The learning from this programme will enable evidence-based policy development within the government of South Africa. ICT4RED is thus part of TECH4RED and is the component within TECH4RED which focus only on how technology can support teaching and learning.

The intention was to use the learning while implementing technology and to develop a conceptual framework, which can be applied in other similar initiatives before inception. This use and application of this framework can ensure that other tablet initiatives in the country have a better chance of success. This framework, in addition, would be well-suited to influence policy on how technology enhanced teaching and learning can be introduced to schools in resource constrained contexts.

2. Education challenges in South Africa

School education in South Africa, despite an investment of 19% of total government spending [4], still faces challenges. The National Planning Commission's Diagnostic Report [5], states that efforts to raise the quality of education for poor children have largely failed. Research evidence [6; 7] highlights the significance of problems within the education system itself. These include ongoing changes to curricula, bureaucratic inefficiencies, teacher under-performance, lack of school leadership and management skills and the non-availability of learning and teaching materials such as textbooks, as highlighted in the recent textbook crisis in South Africa's rural provinces [8]. The complexity of the school system and the interaction with other socio-economic factors also significantly influence performance of learners, particularly in under-resourced and rural schools [3].

ICT is seen as having a transformational effect on the education system; however, many ICT for Education initiatives in South Africa and the rest of the developing world have resulted in failure [9; 10]. Teachers in rural areas are willing to use technology to support teaching and learning, but are not only under-qualified in terms of pedagogy and content knowledge, but are unable to integrate the technology into their teaching activities [10]. In those cases where ICT initiatives in schools do include some kind of training component, the focus is often on computer literacy, rather than how to use the technology as a tool for teaching and learning [10]. There are many stories of unused, locked computer laboratories at schools in South Africa, examples of "technology push", rather than embedding these tools within the local education needs and contexts.

Educational tablet initiatives have been announced around the world [11], however none of these initiatives have developed a framework based on implementation and lessons learnt, which can inform other or new initiatives.

The ICT4RED initiative is rooted in the recognition that larger scale improvements to the education system are not limited to the domain of education departments alone, but require the combined efforts of public and private partners, together with civil society at

National Provincial, and at District and Circuit level. The targeted stakeholders include schools, government (at a provincial level), NGOs and applicable private sector organisations. Schools are regarded as a subsystem of the broader education system and an Education circuit represents the smallest unit in this system.

3. Objectives

The ICT4RED initiative aimed to investigate the application and deployment of tablets, supported by other technologies (which include school infrastructure, network connectivity, e-textbooks and other electronic resources) in 26 schools to develop appropriate contextual frameworks, models, guidelines and tools (as artefacts and outputs) to inform similar initiatives before inception and can possibly guide these initiatives. The scope was to provide tablets to teachers, learners and district officials and to test various models, in terms of infrastructure and connectivity, integration into the school, operations, logistics, Support and maintenance, cost and change management.

All of these investigations and models resulted into understanding the type of technology best suitable to support the education eco-system in the Nciba Circuit of the Cofimvaba school district and to use feedback from 6 500 learners, 350 teachers and 16 district officials to develop an *Evidence-based ICT4RED Implementation Framework* which can inform policy decision makers and other initiative managers who want to embark on similar intervention. These schools are situated between two small towns: Qamata and Cofimvaba. Most of the schools are roughly 79 kilometres east of Queenstown on the route to Butterworth. Xhosa is the main spoken language in the district although the final school exams in the senior secondary schools are taken in English. In addition, English becomes the language of instruction from Grade 4 onwards.

4. Methodology

This initiative involves both research and implementation, using a design science approach, focused on continuous improvement and redesign based on learning, in each iteration. It is also one of the largest and most ambitious ICT for Education research initiative of its kind in South Africa in terms of ongoing and detailed measurement, monitoring and evaluation of the efficacy of the approach to integrate technology into teaching and learning. The value of the initiative lies in the fact that it is being implemented in "real-world" conditions, in a rural educational district and that it was designed by incorporating learning from initiatives of a similar nature from around the world. The fact that it is collaboration between four government departments, bodes well for future sustainability.

Design science research, focuses on creation and the purpose of design is "to change existing situations into preferred ones" [12]. Design science addresses 'wicked problems' in Information Systems or IS [13] and is fundamentally a problem-solving paradigm. Wicked problems as explained by Hevner & Chatterjee [14] relate to the ill-defined environmental contexts, creativity and teamwork to produce effective solutions. There are compelling arguments to accept the educational exploitation of ICT within resource constrained environments such as the Cofimvaba school district as a wicked problem.

The research methodology is grounded in the philosophy of pragmatism and has applied the deductive reasoning approach, which will be operationalized through a Design Research engagement informed by the ICT4RED Component of which each component has been viewed as a unit of analysis towards the development of the *Evidence-based ICT4RED Implementation Framework.* Each of the components (units of analysis) have been investigated through the use of case study research and these results informed the development of the framework which has been the designed by Design science research.

4.1 Design Science process

The iterative nature of the Design Science Research Process is represented by the arrows between the various steps. The Design Science Research Process introduced by Peffers et al. [15] was adapted for the design of the framework as depicted below:

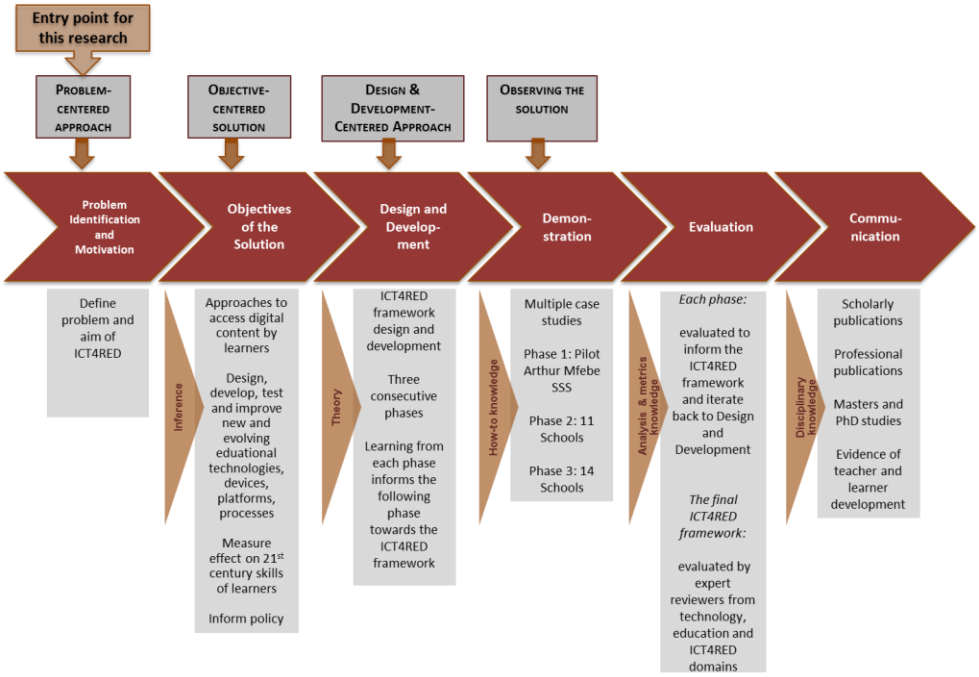

Figure 1: Design Science Research Process adapted from [15]

The following figure explains how the final *Evidence-based ICT4RED Implementation Framework* was developed through the different phases as iterations and where the multiple case studies are included:

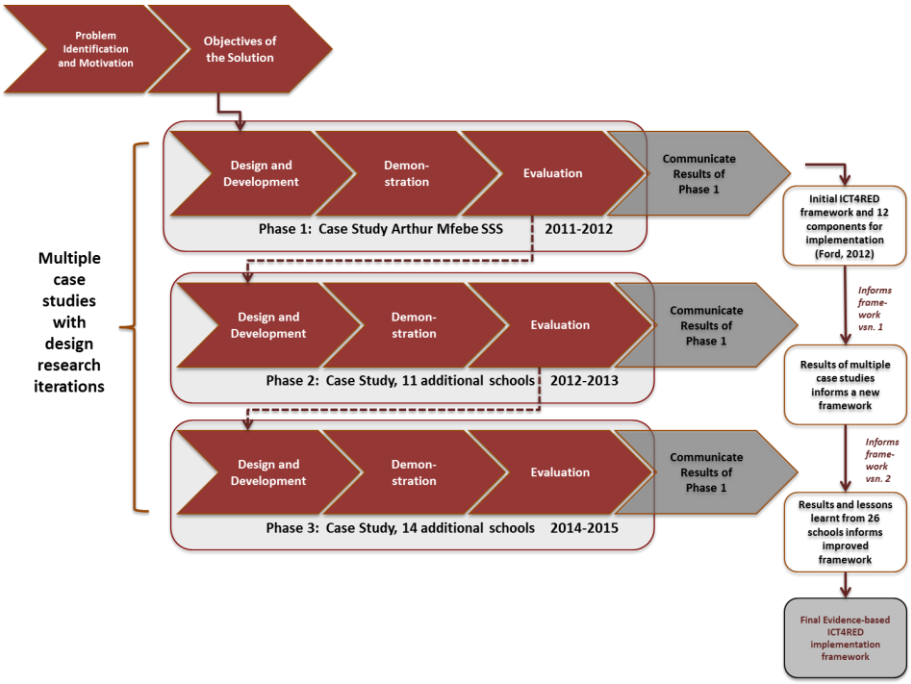

Figure 2: Design science research process with the multiple case studies and the deliverable from each

4.2 Data collection and sampling

In order to ensure accuracy of data a variety of data sources were used. These included observations, interviews (both one-on-one and focus groups), audio-visual material (photographs, text- and video recordings), anecdotal stories, ethnographic reports, feedback from the M&E questionnaires, twitter and WhatsApp feeds and from the implementation of the various components.

The participants were selected using purposive and snowball sampling. With purposive sampling the researcher uses her/his judgment to select specific participants who can contribute to an understanding of the research problem and phenomena central to the investigation in order to meet the purpose of the research [16; 17]. Snowball sampling identifies research participants through a chain reaction as a result of word of mouth. Researchers find one person who comes from the target group and then ask them to recommend additional participants who can contribute to the study. Having gathered data from these participants the researchers then asks them to recommend additional participants [16;17].

Experts from industry, government and academia were involved to validate the final framework.

4.3 Data verification

To ensure accuracy of data and to corroborate the findings and enhance their validity various types of triangulation were used [17]:

- Data triangulation which involves the use of a variety of data sources in a study. For this it will be the participants (teachers and learners at the 26 schools as well as community representatives and leaders and Department of Basic Education's district officials and circuit manager), existing documentation relevant to the study and external experts in the ICT4D, technology and education domains;
- Theory triangulation in which multiple theoretical perspectives were used to interpret the data collected. These are critical theory and design theory; and
- Method triangulation entailed the use of multiple data-generation methods, namely observations, interviews, photographs, video clips, anecdotal stories as well as twitter and WhatApp feeds.

4.4 Different Phases of the development of the framework

The different phases of the initiative are depicted in the following table:

Table 1: Phases in the ICT4RED initiative

	PHASE 0 (2011/12)	REVIEW & DESIGN
This phase consists of desktop research, in order to learn from initiatives around the world, taking into account the particular context of the schools. This feeds into the design of the initiative. Best case scenarios (literature review) what others are doing pragmatically choosing what works.		
	PHASE 1 (2012/13) – 1 SCHOOL	EXPLORE & EXPERIENCE
This phase tests the design and enables the initiative to try and test various things, so that the learning and research can be used to enhance the next iteration.		
	PHASE 2 (2013/14) – 1 +11 SCHOOLS	DESCRIBE & SUPPORT
This phase takes into account the learning from PHASE 1, and essentially goes through a redesign process in order to implement the learning in a new iteration. This iteration is the first attempt to scale the initiative to additional schools, in different contexts (e.g. testing the model in junior secondary schools). At this stage, some general findings can be documented and data and evidence can already be produced that is		

useful to implementers and policymakers.	
PHASE 3 (2014/15) – 1+11+14 SCHOOLS	ADVISE & EMBED IN SYSTEM
This phase does a final redesign, based on the learning from PHASE 2 and enables the initiative to improve the learning around both process and scaling. It is here where the initiative can make final recommendations, based on data and evidence as input to implementers and policymakers.	
PHASE 4 (2014/15) REFLECTING	EXPLAIN & ADVISE, TRANSFER & TRANSFORM
This phase reflects and articulates formal research findings to provide design heuristics of the initiative. These design heuristics need to be implemented with caution as it is highly contextualised in a specific rural resource constrained environment. The limitation and future recommendations for replication or scaling of the frameworks, models, guidelines and tools are provided. This is a snapshot in time as technologies evolve and many of the applications and designs are based on a limited timeframe.	

Each phase represents a specific point in time and the objective was to create a platform to enable widespread participation and collaboration between multiple stakeholders. Linked to the phases is the development of the *Evidence-based ICT4RED Implementation Framework* as after each phase the framework was adapted to accommodate new lessons learnt.

5. Phases with lessons learnt to inform the framework

The phased approach is evident in the following figure:

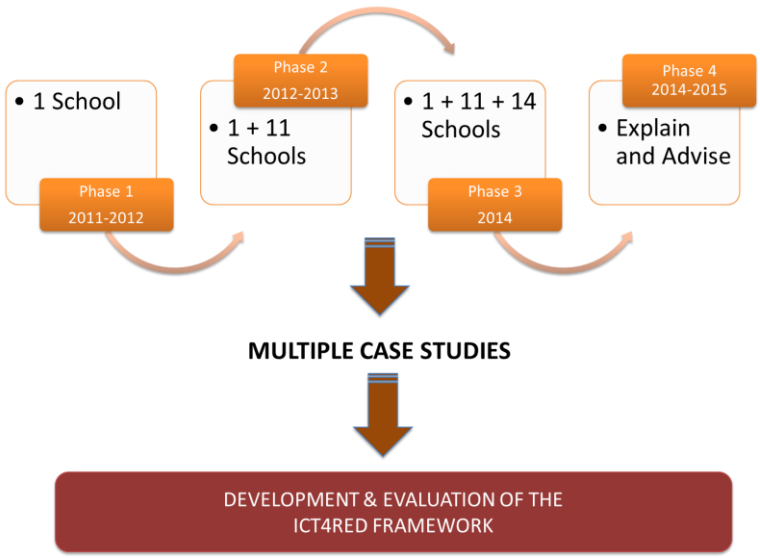

Figure 3: Phases and development of the Evidence-based implementation framework

Each phase will now be discussed.

5.1 PHASE 0

DESIGN	PHASE 0 (2011/12)

Phase 0 included a thorough literature review to understand why some ICT4D educational initiatives where technology was deployed have failed and why some were successful all over the world. Also to determine which elements or components in those that were successful can be useful to incorporate into the ICT4RED initiative and framework. Certain crucial components were identified and these were necessary to change the current less of

"traditional pedagogy" to 21st Century Classroom where there is more of an "emerging pedagogy for the information age". These components were:

Table 2: Components after Phase 0

Component	Purpose and elements
Initiative Management	Financial Management, Procurement and Implementation management which managed the budget and reporting on the initiative.
Monitoring & Evaluation	Forms the basis of the initiative and to monitor and evaluate the impact on learners, teachers and schools as well as on each component within the initiative.
Technology	Decide on devices, provide infrastructure to support use and provide connectivity to schools
Content	Standards, Conversion, Creation and Customisation on tablets and the servers at the schools
Operations Management	Logistics, Support & Maintenance Distribution of tablets, security measures and charging stations.
Pedagogy	Training of teachers to use the devices and preparation of the classrooms
Change management	Support and training for the teachers, district, circuit and community as well as change management processes for the technology use in schools.
Research	Academic Research with academia and post graduate students. Research and development on ICT4Education.

A champion was selected for each of these components and this made up the core ICT4RED team, who was given the responsibility (with support from the Programme and Initiative Managers) to conceptualise, design, plan, manage and implement their component. Regular weekly meetings were used to manage the progress and feedback from each component.

5.2 PHASE 1

PHASE 1 (2012/13) – 1 SCHOOL	EXPLORE & EXPERIENCE

Phase 1 comprised of an exploration at a single senior secondary agricultural school, Arthur Mfebe Senior Secondary school. In 2012, when the pilot took place, the school was comprised of a principal, 12 teachers and approximately 240 learners in grades 10, 11 and 12. Of these, 39 learners were in Grade 12.

5.2.1 Lessons learnt that influenced the adaption of the components

The following lessons were learned which informed the adaption of the components with the elements and these were that:

- All of the teachers who were exposed to 21st Century teaching, and had the opportunity to develop their digital literacy skills. It was confirmed that some of the teachers did in fact show changes in their 21st century skills that translated into a change in which classes were run [18].
- The most significant change, however, is related to the fact that the availability of the tablets made a greater variety of Learning and Teaching Support Material (LTSM) available to more learners.
- The school's informal support systems have been enhanced by a greater involvement of parents, and there are claims that learners' attitudes and expectations may have been impacted positively.
- The initiative directly impacted teachers, district officials and learners.

Based on the above lessons, after Phase 1, the names of the components, as well as the focus of these components, changed. The "TECHNOLOGY" component was expanded into

"SCHOOL ICT INFRASTRUCTURE" (to make provision for the unique ICT needs within a school) and into "NETWORK" (to cover different technology challenges in providing connectivity between schools and to the Internet). The initiative also did not make enough provision for getting buy-in from the parents and wider community, so "COMMUNITY ENGAGEMENT" was the result. There was also a need to ensure ongoing engagement with the District Office, the provincial education department and the national government departments, so "STAKEHOLDER MANAGEMENT" was added. The components with the elements were underpinned by the constant monitoring and evaluation of every aspect and phase.

It was also realised that to adequately cater for the transformation of the schools into "21st Century school environments", the improvement of teaching practise was added as an understanding of what it would take to transform these schools. The concept of "PEDAGOGY" was thought to be too vague and this eventually became "TEACHER PROFESSIONAL DEVELOPMENT", one of the primary drivers in the initiative. The emphasis on "RESEARCH" also evolved into the specific needs identified by government, that of "EVIDENCE-BASED POLICY" support. There was also a lack of a "COMMUNICATION" strategy, as it became increasingly important to share the learning of the initiative and to get the correct message out to the media and other interested parties. The following 12 components were thus making up the framework after Phase 1:

Table 3: 12 components

Component	Purpose and elements
Initiative Management	Financial Management, Procurement Implementation management
School ICT Infrastructure	Devices, Wireless LAN, Storage and Power
Network	Wi-Fi Mesh, Satellite, Backbone connectivity, Internet
Change Management	People (District, School Management Teams), Technology Processes, teachers teaching innovatively. All part of the exit strategy for the schools and school district to take over the sustainability and future of this intervention.
Teacher Professional Development	Training teachers to use mobile devices to enhance their teaching and learning. They apply their trained knowledge as evidence in the classroom with their learners to earn their devices.
Content	Standards, Conversion, Creation & Customisation
Operations Management	Logistics, Support & Maintenance Distribution
Communication	Marketing strategy, Social Media Strategy, Knowledge Management
Monitoring & Evolution	Learners, Teachers, Schools
Evidence-Based Policy	Academic Research, Implementation guidelines, Policy guidelines
Community Engagement	Learners & Parents, Teachers, Community
Stakeholder Management	District/Circuit officials, Local Leadership, influential and decision-makers from the community, Provincial leadership.

5.3 PHASE 2

PHASE 2 (2013/14) – 1 +11 SCHOOLS	DESCRIBE & SUPPORT

This phase built in the lessons learned from Phase 1 and developed an amended strategy and plan. The District Office was much more actively involved, and became resources on the initiative.

5.3.1 Reflection and Learning after Phase 2

The following high-level learning points have emerged:

- The decision to start small and expand into the **circuit**, then potentially into the **district** and **province** was a good one, as it enables the system to absorb the changes, develop the skills and capacity to manage the technology and provides accessible support systems (e.g. school to school support). Sustainability becomes probable.
- The model being developed is **education-focused** NOT technology-focused. Teacher professional development modules enable teaching strategies with technology as a tool. Many of these can be used in the absence of technology as well. The expected outcome is better teaching.
- The Earn as You Learn (EAYL) badge system is incredibly successful.
- It is possible to **effectively use tablets in an offline mode** (i.e. no connectivity), as long as there is sufficient useful preloaded content on the tablets. Connectivity was gradually provided to all schools and not all at once.
- Appropriate curriculum-aligned **content is still a major challenge**, especially for younger learners. There needs to be a push to get South African based contextual content developed that is designed for mobile devices.
- Content ONLY in the **cloud is NOT a viable solution**. The bandwidth challenges would be impossible. Teachers and learners have an "Internet-like" experience by accessing the local content server containing the cached content.
- The current model is based on **empowering the teachers** (tablets and professional development) and **preparing the schools** (change management and supporting infrastructure) before rolling out to the learners.
- It is difficult to select good tablets – there are problems even with so-called reputable companies. There is a need to **revisit specifications every 3-6 months** as the technology improves. It is important to **develop standards-based criteria** and NOT product-based criteria for tablets – theoretically it should not matter what brand tablet is selected, as long as it conforms to the standards – gives parents/government choice based on budget and prepares the way for a "Bring Your Own Device" scenario.
- It's critical to make provision for **secure charging** in the school environment – this has implications on power needs and costs in the schools.

Based on these above lessons the following picture represented how the 12 components can guide implementation and which components are seen as enablers and drivers. This was the framework as it was viewed after the implementation of Phase 2.

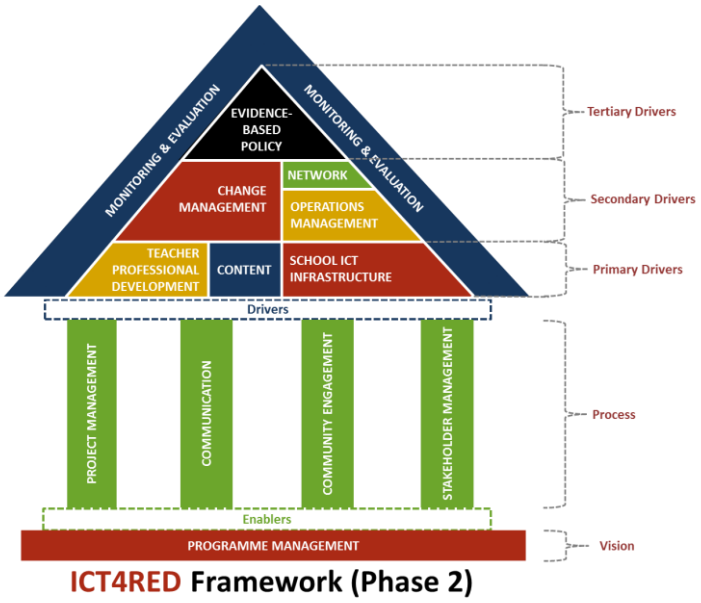

Figure 4: Conceptual framework emanating from the 12 components after Phase 2

5.4 PHASE 3

PHASE 3 (2014/15) – 1+11+14 SCHOOLS	ADVISE & EMBED IN SYSTEM

The expansion to the other schools for PHASE 3 has resulted in the following important lessons which were learnt in Phase 3:

- At the centre of this initiative is the teachers' engagement with the Teacher Professional Development Component. This component is what makes this initiative a success. Attendance is high and teachers are starting their own co-creation of content, lessons plans and sharing this in communities of practice with similar teachers in their area. The extra support provided by the facilitators, participating teachers and the badge collectors towards the end of the programme, is likely a contributing success factor. It created opportunities for teachers to exchange ideas about teaching with technology, it highlighted the possible value of ICT for teaching and learning and it created some level of support through the establishment of school based ICT committees. Teachers have also gained more knowledge through leadership and change management courses and are using their tablets now for administrative tasks as well.
- A sustainability plan and strategy have to be developed by various stakeholders in the Cofimvaba school district like the circuit manager, district officials and Eastern Cape Department of Education to support ICT champions at schools and address other ICT architecture issues like tablets upgrades, tablets problems, Internet and Wi-Fi connection problems and training of new teachers after the ICT4RED initiative ends.
- Almost all teachers reported becoming more comfortable with their technology, and there is evidence that the initiative contributed towards more positive attitudes towards using technology for teachers.
- For practitioners, the ICT4RED Teacher Professional Development Course is made available online under a Creative Commons Attribution-Non-commercial-Share Alike 3.0 licence. There was also some interest from persons located in the government departments associated with the initiative, and two education department officials from provincial education Departments downloaded the material in order to influence their own thinking on teacher training. This resource, therefore, has the potential to have a

real impact in how different stakeholders actually approach their own work in ICT or Education.

This feedback and own experiences of the ICT4RED team have resulted in adapting the components to develop the final *Evidence-based ICT4RED Implementation Framework*. The components which have to be adapted are mainly the drivers as TPD has now become the centre around which everything else happens and supported or influences or enables the TPD component. As Wolske indicated in a keynote address [19]:

> [E]xpertise in technology should never be THE ANSWER, only a possible tool, when appropriate and collaboratively crafted. We must remain people-centered. This difficult if the conversation is techno-centric.

Other changes to the components involve the evolvement of PROGRAMME MANAGEMENT to incorporate evidence-based policy, a different community as well as managing the communications about the initiative to external parties. OPERATIONS MANAGEMENT should also include the management of content, devices, infrastructure and support and maintenance. ICT ARCHITECTURE becomes SCHOOL ICT component and it hosts all the school related ICT hardware, software and infrastructure decisions and issues. A new central focus has to be provided to COMMUNMITY ENGAGEMENT which now becomes the community consisting of people and organisations internally to the specific context. MONITORING AND EVALUATION still stays the overarching component which measures success and failure but also impact. It is now on the periphery and overseas the whole initiative including programme management.

Based on these adaptions the new and final ***Evidence-based ICT4RED Implementation Framework*** can be found below:

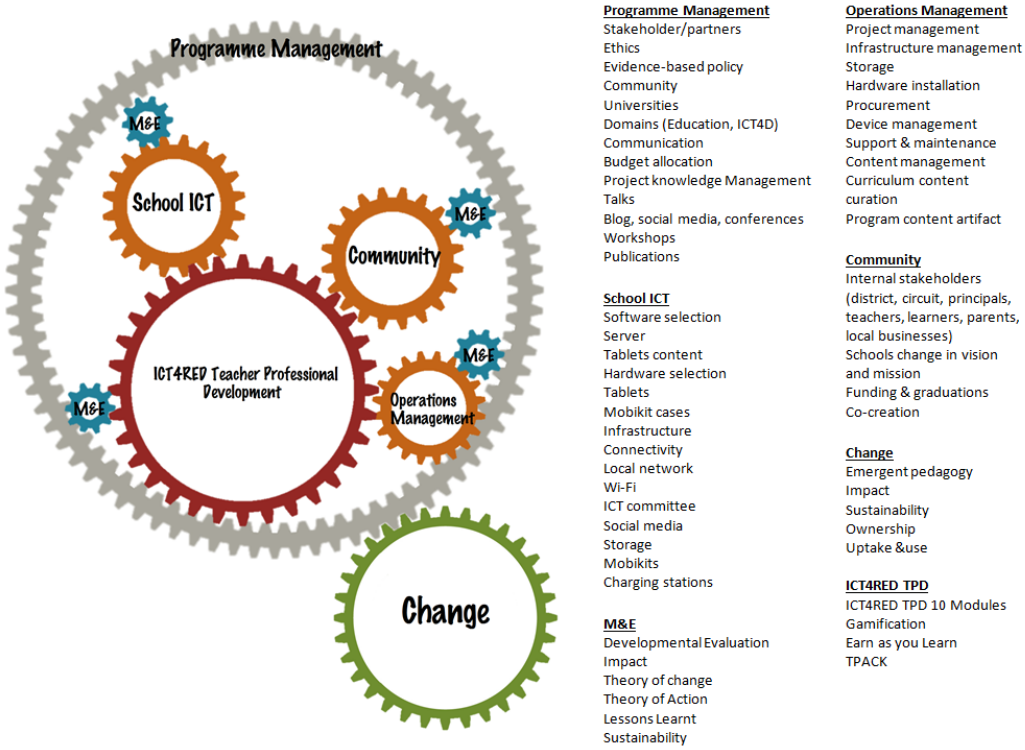

Figure 5: Evidence-based ICT4RED Implementation Framework

The Evidence-based ICT4RED implementation framework was thus a result of taking an ICT4D initiative through different phases and applied the knowledge experiences gained to adapt and improve it.

5.5 PHASE 4

	PHASE 4 (2014/15) REFLECTING	EXPLAIN & ADVISE, TRANSFER & TRANSFORM

This last phase was where the final *Evidence-based ICT4RED Implementation Framework* is subjected to experts for review both internally (Participants and core team) and externally (policy-making stakeholders and funders). This was also the phase where the ICT4RED team reflected and completed final deliverables.

The learning from this initiative was being designed to feed into the system in a multi-dimensional way, to a variety of stakeholders in the educational eco-system and resulted in Evidence-based policy outputs (guidelines, models and frameworks, standards, recommendations, policy briefs) to national and provincial governments, Practitioner outputs (planning and implementation guidelines, tools, templates, checklists) to various practitioners (schools, NGOs, provincial implementing agencies, etc.), Research outputs (conference papers, books, journal articles) to the ICT4E and ICT4D research community and finally decision-support tools

The feedback from the experts was all positive. Their feedback first and foremost supports the layout and focus of all components in the framework. It highlights the importance of context, schools, ICT management, development of teachers and the monitoring and evaluation of all of these from beginning until end to affect change. All components should be supporting Education in an ICT4D context to have impact and sustainability in the long term. It is a wish from this initiative that this framework can inform innovation initiatives in schools through ICTs and that government departments apply this whenever they want to deploy any type of technology to support teaching and learning. It can be cost intensive, but it indicates what should be considered before deploying technology in schools.

6. Conclusions and recommendations

Schools are the building blocks for learning and socialization and the quality of the schooling system impacts significantly on further education and society's ability to innovate. This paper provided an overview of how a specific framework was developed over time in a specific context based on the process of Design Science Research. If sustainability is considered from the beginning of a project, it will ensure better planning and hand-over. Specific sustainability guidelines have to be developed which can act as guidelines or support mechanisms to apply when embarking on future projects with a similar nature and in a similar context.

Some significant policy recommendations emanated from the implementation of the ICT4RED initiative can also be made and include:

- Integrating mobile technology into a resource-constrained environment to support teaching and learning has to be done by focusing on empowering teachers through professional development training courses before deploying technology. The earn-as-you-learn reward-based badge system proved to be very successful in this context.
- Provision needs to be made for new responsibilities for district officials and principals (along the whole command chain), so that they can actively support tablet implementations as part of their daily tasks.
- Support by the Department of Basic Education, together with the local provincial department, and budget for mobile tablet upgrades, teacher professional development training courses extra staff, and maintenance of infrastructure will contribute towards sustained change in rural education.

Successful integration of technology into schools has the potential to transform schools and the education system as a whole. Change will be sustained if the capacity of the environment to adopt change is understood and planned for, and if the intervention is absorbed into the bigger educational system.

This Evidence-based ICT4RED implementation framework is hopefully the first step to influence policy makers to apply it when integrating technology into schools. What became evident from this initiative was that it was NOT about the technology, but about the PEOPLE who are empowered to use the technology to improve their lives and that of their learners!

"New technology is common, new thinking is rare." – Sir Peter Blake

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