

# **INTEGRATED MATHS PROJECT MONITORING AND EVALUATION REPORT 2016-2018**

## **PARTNERSHIP BETWEEN COMIC RELIEF, DFID AND GREEN SHOOTS**

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### **EXECUTIVE SUMMARY**

Comic Relief, an UK based charity, partnered with Green Shoots Education Services, a South African NPC, to provide a Maths Curriculum Online (MCO) to 32 schools in the Northern and Western Cape provinces as part of an Integrated Maths Programme (IMP). Four outcomes were identified to achieve in the three-year lifespan of the project. The IMP firstly needed to contribute to the quality of Maths teaching, developing teachers' pedagogical content knowledge and capacities to use data to improve teaching and learning strategies. Secondly, the project aimed to improve learners' attitude and engagement in Maths, and their ability to set goals and work towards achieving these in the subject. Thirdly, the IMP aimed to raise learners' Maths attainment in terms of the number of learners passing Maths in all grades. Lastly, the IMP wanted to impact the culture in schools and the education department, to make data informed decisions that impact teaching and learning practices at school and district levels. Green Shoots commissioned a three-year monitoring and evaluation study to monitor and evaluate to what extent they achieved these outcomes.

The monitoring and evaluation of the Green Shoots Comic Relief project was conducted between 2016-2018 by Dr Isabel Tarling and Associate Prof Dick Ng'ambi. Data was collected through structured surveys and semi-structured interviews with district officials, principals and focus groups of teachers and learners. Quantitative and qualitative data produced through the surveys and interviews were analysed and reported in two interim reports (2016 and 2017) compiled by both researchers, and this project report compiled by Dr Isabel Tarling.

The analysis of data provides irrefutable evidence that each one of the four outcomes set for the project were met beyond expectation. Data from surveys and interviews with teachers and triangulated with data from principals and district officials, provides evidence that the IMP increased the quality of Maths teaching and learning in schools. Teachers learnt how to interpret the data produced by learners using MCO to identify gaps in learning in whole classes or individuals, to identify where learners are struggling, and through the PLCs, to developed strategies to address these areas. The data also indicates that teachers developed greater confidence in their conceptual understanding and pedagogical knowledge, increasing their pedagogical content knowledge and interest in Maths through their participation in the project.

The data analysis further indicates that learners developed greater agency the longer they participated in MCO and were exposed through repeat use, to the immediate feedback from the system. District officials indicated that learners' attainment in Maths increased by up to 15% during 2017-2018 and attributed this to MCO use. Learners attitude towards the subject and confidence in their Maths abilities also increased during this period. Using state-of-the-art knowledge from the field of learning science, a direct correlation was established between learners' ability to judge their learning and their actual performance, a measure expressed as the degree of calibration. In the initial surveys learners had been exposed to MCO for a few months and appear to be overconfident in their abilities, while their actual performance lagged significantly behind this. In the second year, learners attained higher marks, but the data indicates they were far less confident, suggesting that they were underconfident when judging their learning. As they continued to

participate in MCO, in the third year, their judgement of learning and actual performance indicates a far greater degree of calibration. This finding signifies an exciting and previously unexplored contribution to knowledge, showing that through their repeat-exposure to MCO learners were able to improve their degree of calibration and ability to learn. Increasing learners' calibration and ability to learn, is rarely reported in literature and represents a significant contribution to new knowledge in the learning sciences.

The data analysis also provided irrefutable evidence that the IMP achieved change by contributing to the development of a culture of teaching and learning. Green Shoots as an organisation espouses what Avgerou (2010) describes as a socially embedded approach to educational change. Rather than seeing innovation as a generic, application neutral and universally transferrable set of skills, applications or behaviours, a socially embedded approach embeds innovation in local contexts. MCO is thus framed as a technological tool that requires local actors and organisations to make sense of and accommodate it in their daily lives (Avgerou, 2010). Innovation was achieved within local contexts schools and districts developed different techno-organisational processes, structures and systems as they problematized local challenges and developed solutions to these.

Many of the challenges so prevalent in the resource-constrained under-performing schools across South Africa, were positively impacted by the IMP. The funding provided in partnership between Green Shoots and Comic Relief allowed the IMP to overcome many of the resource-related challenges that prevent many schools from fully utilising technology solutions. Old, outdated computer systems were revamped and maintained for the course of the project while unused tablets were utilised alongside desktops still running on Windows XP. Before the IMP, some of the schools also lacked schedules and timetables to regulate teaching and learning activities. As a consequence of problematizing challenges and identifying needs within local contexts, local actors were equipped to create timetabled use for MCO which in turn impacted the regulated scheduling of other learning events in the school. High absenteeism was also significantly impacted with schools noting up to 100% attendance among learners on days when they had time in the lab for MCO.

Spaull (2013) found that learning challenges typically originate between Grades R-6, and compound to become insurmountable barriers to learning essentially precluding children from learning in higher grades. The IMP is situated in these critical years, working with Grades 3 – 7 learners. Schools as organisations developed techno-organisational structures, processes and systems, becoming in many instances functioning institutions. Learners developed greater agency and calibrated their judgement of learning and actual performance. Teachers gained deep insights and developed conceptual understandings to increase their pedagogical content knowledge, increasing the quality of teaching in the project schools. District officials and principals were capacitated to monitor curriculum delivery and develop targeted strategies to improve this. The data thus indicates that the greatest contribution of this project has been to establish a sustained culture of teaching and learning in schools where this was often lacking before the introduction of the IMP. Since 1994, various largescale systemic initiatives have repeatedly aimed to achieve this, and largely failed as different educational researchers found. In contrast, this team of dedicated, passionate individuals inspired under-performing schools and achieved far beyond what they set out to do. This project should be used as an exemplar for all similar future projects.