

Research Report on the Analysis of Maths and Science Initiatives in the Built Environment

Abstract

The basic requirement for entry into the built environment and related professions is normally through attainment of qualification offered by universities. The basic entry requirements into built environment programmes at universities include, for most universities, if not all, mathematics and science at matric or A –level. It is generally accepted that these are the two main subjects that students from previously-disadvantaged are weakly schooled in and need to be supported and this lack, prevents their access to the built environment programmes in universities, and subsequently their entry into the built environment professions. Growing number professionals in the built environment can only be achieved if an increased number of students in secondary and high Schools from underprivileged communities can attain good marks in mathematics and science at Matric level of qualification. In 2016, the CBE conducted a study to spatially map mathematics and science initiatives implemented by the various stakeholders in the built environment with a view to improving access to the built environment for all. Information from the literature was used to develop a questionnaire that administered to various stakeholders. Most of the Maths and Science initiatives targeted and served underprivileged communities and students. Maths and Science initiatives are spread across the nine provinces in the country, however, are mostly concentrated in urban areas.

The Maths and Science initiatives targeted learners in grades 10, 11 and 12 in South Africa. In terms of spatial distribution, the Dinaledi Schools Project is far reaching as it targets specific improvement of maths and science in schools in all provinces. By 2014 a more than 500 schools were involved in the Dinaledi programme. Each province has embarked on their own maths and science initiatives which in most cases are either solely operated by a non-governmental organisation or in partnerships with provincial or local government. Awareness of these initiatives provided the CBE with an opportunity to see which areas are least served but also identified the most likely partnership that could be forged.

Introduction

The Council for the Built Environment (CBE) is mandated to enhance and promote the development South Africa is the built environment through

engagement with the six professional bodies representing architects, engineers, quantity surveyors, property valuers, project and construction managers and landscape architects. Various expressed concern regarding the capacity of the Built

Environment to meet the challenges of new infrastructural development.

This concern is often described in terms of scarcity of adequately qualified professionals capable of delivering new infrastructure. The second key challenge that South African Government has been focusing on, is the demographic transformation of the built environment through facilitation of growth of professional from previously disadvantaged communities and women in general.

The basic requirement for entry into the built environment and related professions is normally through attainment of qualification offered by universities. The basic entry requirements into built environment programmes at universities include, for most universities, if not all, mathematics and science at matric or A –level. It is generally accepted that these are the two main subjects that students from previously-disadvantaged are weakly schooled in and need to be supported and this lack, prevents their access to the built environment programmes in universities, and subsequently their entry in to the built environment professions (Dinaledi Schools Project Report: 2009) .

Methodology

To achieve the aim of the study, a quantitative approach was adopted. Data was collected through data collection instruments such as questionnaires/surveys, targeting built environment councils. A descriptive analysis approach was used to analyse the study. in the first part of the study interrogated literature with a view to establish the contemporary trends of maths and science initiatives that exist in the built environment of South Africa. Information from the literature review was used to develop a questionnaire that was administered to the six built environment professional councils. The second part of the study responses questionnaire facilitated an analysis of the built environment council's performance of the maths and science initiatives.

The objectives of this study are to:

1. Spatially map mathematics and science initiatives implemented by the various stakeholders in the built environment with a view to improving access to the built environment for all.

Research Findings

Most of the Maths and Science initiatives targeted and served underprivileged communities although not exclusively. Maths and Science initiatives spread across the nine provinces in the country, however, are mostly concentrated in urban areas.

Each province embarked on their own maths and science initiatives which in most cases were either solely operated by a non-governmental organisation or in partnerships with provincial or local government. The Dinaledi Schools Project had a far reaching (± 500) impact as it targeted specific improvement of maths and science in schools in all provinces.

Professional councils indicated they did not implement Maths and Science initiatives but collaborated with universities in awareness programmes targeted at high schools. Rural and township school going children did not have exposure to the diversity of professions in the built environment. Students in such contexts need exposure to local infrastructure, mentoring by professional and educational tours to infrastructure projects.

CBE Interventions

- In 2015, CBE partnered with CBEP to massify career awareness campaigns and workshops in schools across the countries.
- In 2017, initiated Maths and Science Programmes in high schools across the country with the intention of increasing the number of high school learners enrolling in built environment programmes in higher education.

Recommendations

- CBE, CBEP to partners with industry stakeholders to massify career awareness programme in the built environment.
- Government and the private sector to expand the bursary funding for built environment academic programmes.

Conclusion

The study has revealed numerous sites where maths and science initiatives are being undertaken for learners in grades 10, 11 and 12 in South Africa. The nature of the Maths and Science programs is a broad spectrum of initiatives that are organised by wholly government funded projects to independent non-governmental entities with a hybrid of initiatives in the midst.

In terms of spatial distribution, the Dinaledi Schools Project is far reaching as it targets specific improvement of maths and science in schools in all provinces. By 2014 a more than 500 schools were involved in the Dinaledi programme. Each province has embarked on their own maths and science initiatives which in most cases are either solely operated by a non-governmental organisation or in partnerships with provincial or local government. Awareness of these initiatives provided the CBE with an opportunity to see which areas are least served but also identifies the most likely partnership that could be forged.

References

Anglo American (2010). Chairman's Fund supports Maths, Science
southafrica.angloamerican.com/media/press-releases/.../29-04-10a.aspx.

Brown and Yates. (2002). Seeing the World through another Person's Eyes in Changing Architectural Education- Towards a new professionalism- edited by David Nical and Simon Pilling. London. Spon Press.

CBE. (2014). Science on the go. First quarterly report.

Legoabe, R. (2017). Barriers that constrain municipal infrastructure deliver & professionalism.

Watermeyer, R. and Phillips, S. (2020). Public infrastructure delivery and construction sector dynamism in the South African economy.

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