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South Africa's School
Infrastructure Performance
Indicator System

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South Africa's School Infrastructure Performance Indicator System

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While some South African schools have excellent infrastructure, others lack basic services such as water and sanitation. The school infrastructure performance indicator system (SIPIS) project offers an approach that can address both the urgent provision of basic services as well as support the development of more sophisticated and more effective education environments over time.

Apartheid policies have left a legacy of large school infrastructure backlogs in what were formerly black areas while provision in formerly white schools appears relatively lavish, with schools provided with well-equipped laboratories and irrigated sports fields. The Department of Education has developed policies and funding norms that aim to make provision in different areas more equitable. This will be achieved by focusing funding on backlogs. At the same time, however, the government wishes to ensure that schools with good provision do not deteriorate and that all school infrastructure continues to be improved and is up-to-date.

The vast differences in provision in South Africa present a challenge to planning and managing school infrastructure and raise a number of questions. Should most resources be allocated to schools where infrastructure is poor? How should school infrastructure be improved over time? Which aspects of school infrastructure should be tackled first? How can urgent backlogs be prioritised within a framework that also ensures improving the overall performance of school infrastructure in the long term?

The country's Council for Scientific and Industrial Research designed the SIPIS project to help address these questions by investigating the performance of school infrastructure and establishing how to measure it. In particular, the project aims to identify the key aspects of school infrastructure that are required in order to support an equitable, modern, high quality education system.

The SIPIS project was undertaken in a number of stages. A context analysis and literature review served to develop an integrated building performance model. From the performance model, a school infrastructure assessment framework was designed. This framework was tested and refined through desk studies and fieldwork carried out at urban and rural schools throughout South Africa. Data from these studies was used to refine the assessment framework in order to propose key school infrastructure performance indicators. These indicators can be used by physical planners to plan school infrastructure and by schools to assess, plan and improve their own infrastructure, in more holistic and effective ways.

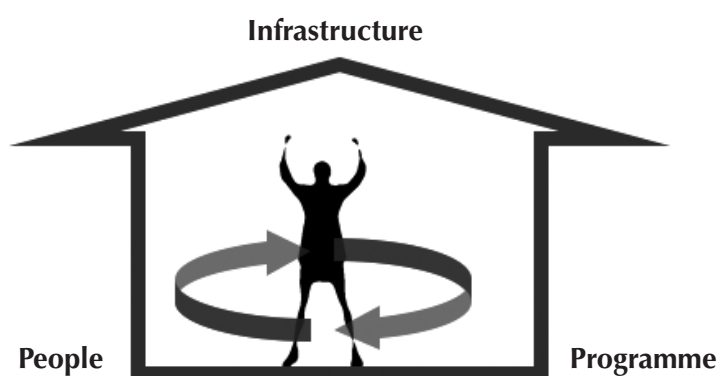
INTEGRATED PERFORMANCE MODEL

The context analysis and literature review, which included a review of national education policy, clearly indicated that any approach to school infrastructure had to balance the urgent need to address

backlogs in basic services such as water and sanitation with a continuing requirement to improve the quality of education infrastructure in all schools. The integrated performance model which was developed attempted to span these requirements by defining building performance in three areas: infrastructure, programme and people. Performance in each of these areas is described as follows:

- **Infrastructure:** Infrastructure should be able to inherently perform well. This includes ensuring that buildings are weather tight, structurally sound, have low operating costs, and are spatially and resource efficient.
- **Programme:** Infrastructure should effectively support the activities that it is required to accommodate. For instance, school buildings should accommodate the current curriculum and preferred modes of teaching and learning.
- **People:** Infrastructure should allow users to be comfortable, healthy and productive and should meet users' basic needs. It should also guarantee that human rights are respected.

Figure 1. **Integrated building performance model**



2

ASSESSMENT FRAMEWORK

From the integrated building performance model, the Council created an assessment framework by identifying an initial set of performance criteria in each of the three areas defined above. Data was then collected on these through desk studies and fieldwork. In order to capture the wide range of data required, both qualitative and quantitative methodologies were used. These included:

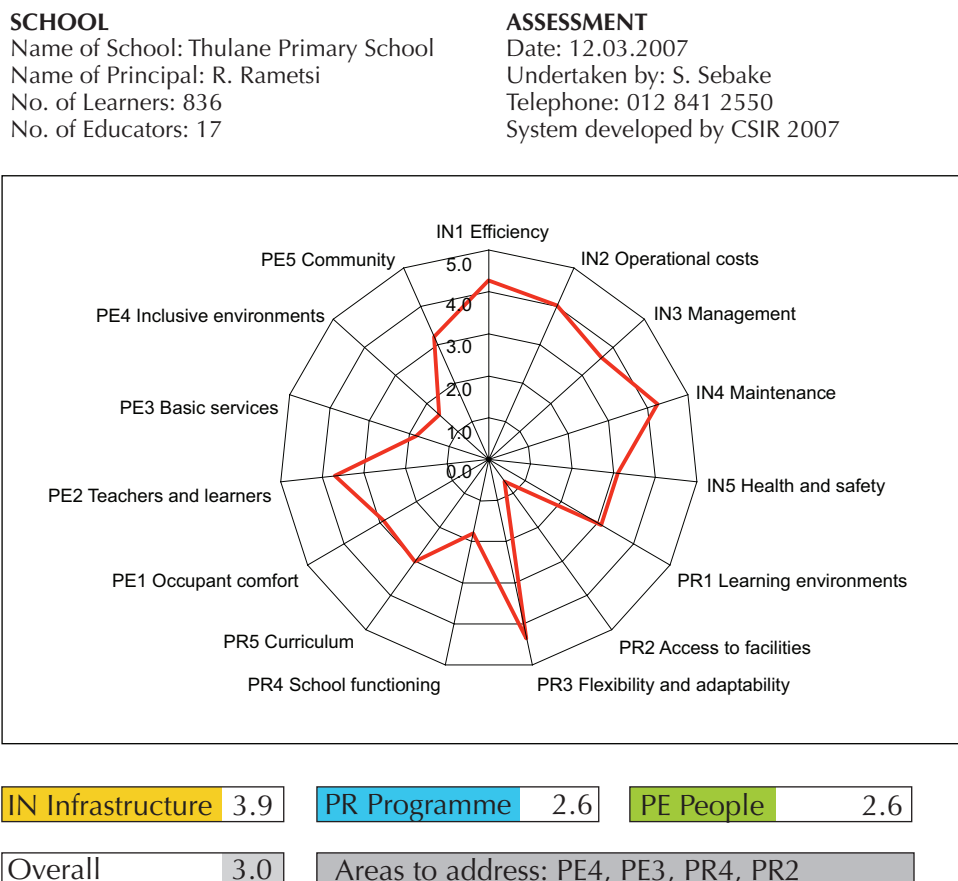
- **Desk studies:** Desk studies were carried out to determine aspects such as spatial efficiency, the proportions of different space types, and potential learner contact time with educators and technology, such as computers, allowed by infrastructure.
- **Interviews:** The principal, school staff, school governing body members, learners and the local community were interviewed. The interviews aimed to identify aspects of school infrastructure design and management that were important to the different role players. They also established an understanding of local infrastructure management capacity, school infrastructure plans, operating costs, health and safety issues, and the extent of community involvement in the school.

- **Class exercises:** Class exercises involving drawing and writing served to further reveal which aspects of school infrastructure mattered most to learners.
- **Assessments:** These captured and evaluated maintenance, basic services, furniture layouts, fittings and equipment provision, occupational health and safety, and access for learners with disabilities. The assessments aimed to establish re-occurring infrastructure problems or deficiencies that need to be addressed to meet an acceptable standard.
- **Observation:** Learner and teacher behaviour were observed at set points throughout the day in order to understand how spaces and facilities were being used. In addition school infrastructure was analysed for signs of use to find out where usage was particularly heavy or where infrastructure was being modified and adapted for uses not originally foreseen.

PERFORMANCE INDICATORS

The data collected suggests that school infrastructure performance can be measured against 15 criteria, five in each of the areas of infrastructure, programme and people. Performance can be represented graphically in a radar diagram (as indicated in Figure 2).

Figure 2. Sample school infrastructure performance indicator system report



The envisaged final output of the project is a system of indicators that the Departments of Education, physical planners and schools can use to develop a holistic picture of the performance of school infrastructure. Diagrams such as shown in Figure 2 can enable them to easily identify deficiencies in school infrastructure. Defining performance in terms of infrastructure, programme and people can also help those interested, such as an Inclusive Education Directorate, to track progress and undertake programmes to improve performance in their respective areas. It is also envisaged that the tool contribute to infrastructure plans developed by schools by assisting them to self-diagnose problem areas. In addition, the SIPIS can guide schools in prioritising and identifying appropriate interventions that would not only address current problems but also improve school infrastructure performance over time.

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