INVEST, MONITOR, AND MEASURE:
THE QUEST FOR THE IMPACT OF ICT IN EDUCATION

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ABSTRACT

This paper highlights the collaborative efforts in monitoring and measuring the impact of ICT in education between the Malaysian Ministry of Education and the Multimedia Development Corporation (MDeC), a government agency which oversees the development of MSC Malaysia, a national ICT initiative. Three main agenda items will be addressed. First, the discussion will discuss the rationale that formed the impetus for the development of a monitoring and measuring tool, the Smart School Qualification Standards (SSQS) that has now become the tool for monitoring strategies and measuring the impact for ICT in education in Malaysian public schools. This will touch on the issues of achieving a return on investment linked to skill-based and learning outcomes and the other relevant background. Second, the paper offers a description of the SSQS and its implementation in various phases and groups of schools. In this regard, how the SSQS is used to address root causes of problems and school-based strategies to overcome such problems will be presented. Third, the paper will discuss the findings and way forward from the SSQS implementation experience. For this, the achievements at the school level and the contribution to policy decisions will be covered

1 THE SMART SCHOOL FLAGSHIP: AN IMPETUS FOR TRANSFORMATION

In 1996, Malaysia identified information and communication technology (ICT) as one of the key foundations for its projected transition from a production-based economy to a knowledge-based economy by 2020, known as VISION 2020. In declaring these goals, the government also acknowledged that such a transition will require a workforce capable of exploiting ICT to create new economic opportunities.

In order to develop this talent pool, the government announced the need to reengineer the country’s education system and align it with its VISION 2020. The Malaysian Smart School Flagship was one of the seven applications identified under the Multimedia Super Corridor Malaysia (MSC Malaysia) initiative, which envisages the creation of high-value jobs in the country, achieving high and consistent growth driven by exports, improving national productivity and competitiveness and achieving value creation.

The Smart School programme was conceptualized in early 1996 and in 1997. The Malaysian Smart School – A Conceptual Blueprint [1] was
conceived with the immediate objective of reinventing the teaching and learning process with the aid of ICT.

At the same time, the Smart Programme is also aligned with the objectives of MSC Malaysia, which growth and development is overseen by MDeC. The history of the Smart School project is rooted in the two-pronged objectives of the flagship, which are:

To jumpstart MSC Malaysia towards:
- building a knowledge-based economy
- contributing to the growth of the ICT industry
- creating a pool of talent resulting in high-value job creation

To prepare the citizens for the information age through an innovative education delivery process
- building human capital for the 21st Century
- reducing digital divide

The Smart School Programme has been implemented since 1997 with the Ministry of Education, as the lead agency in collaboration with MDeC. The implementation can be categorized into three waves as the following:

Wave 1 – The Pilot Phase (1999 – 2002) – 88 schools from all over the country selected as pilot smart schools

Wave 2 – The Post-Pilot (2002 – 2005) – massive computerization phase with several ICT initiatives introduced for all 10,000 schools

Wave 3 – Making All Schools Smart (2005 - 2010) – leveraging all ICT initiatives to inculcate innovative teaching and learning practices utilizing ICT

Wave 4 - Consolidate and Stabilize (2010 – 2020) - all schools would have instilled amongst administrators, teachers, and students certain degree of innovative practices using ICT

It was in Wave 3 that the intensified transformation journey was required to create a nucleus of smart schools as benchmark for other schools to emulate as part of the making all schools smart initiative.

This paper will describe the transformation journey for making catalyst smart schools and using the Smart School Qualification Standards (SSQS) as the monitoring and measuring tool.

Data referred is primarily derived from a qualitative approach such as the focused-group discussions and on-site monitoring visits combined with data gathered quantitatively.
2 RATIONALE FOR INCREASING INNOVATIVE PRACTICES IN TEACHING AND LEARNING

In 2006, the Ministry of Education (MOE) and MDeC decided that there had to be an aggressive measure to increase innovative practices in teaching and learning leveraging existing ICT provisions in schools. The first cluster of 88 smart schools became the focal point for modeling purposes.

As has been argued about ICT and innovative learning, ubiquitous learning technologies, such as the Internet, multimedia and virtual environments, brings the focus on learning with technology, not learning about technology. There is indication through a growing body of research that ICT is a significant benefit when used effectively [2].

2.1 Problem Areas

A. Old Methods, New tools

An insight into the use of ICT-based content [3] reveals that teachers were using ICT devices and content mainly to accommodate the conventional methods. This non-optimal use of ICT was not resulting in the targeted objective of the Smart School Programme towards innovative and creative teaching and learning activities. There was a need to shift the plug and play approach to select, create and integrate to bring out innovation and creative teaching and learning strategies.

Findings from studies [4] also point out that the old methods new tools phenomenon inhibit innovative and creative approaches that can be achieved from ICT integration in teaching and learning activities.

B. Return on Investment

The Government of Malaysia has invested nearly USD9 billion for a comprehensive ICT programme covering computer labs, broadband, ICT-based content, teacher notebooks, access centres, and web TV for all schools. Training programmes to upskill teachers accompanied the ICT provisions. The low rate of meaningful use of the facilities has triggered concerns on wastage of resources.

C. Creating a Nucleus for Exponential Growth of Innovative Practices in Other Schools

The 88 smart schools, selected as pilot schools, needed to escalate the level of practices to that of an exemplary one that can be emulated by other schools. This is in line with the government's policy of making all schools smart by 2010. Essentially the policy targets that by 2010 all schools will
exercise some features of smart school practices. As such, specially designed programmes needed to be established at the school level for implementation.

3 THE ROOT CAUSE OF THE PROBLEMS

While the drive to increase the uptake of ICT among teachers is apparent in the size of expenditure on ICT initiatives, there are prevailing issues. These issues have commonly been highlighted in literature citing criticisms of ICT, which, among others, are inappropriate lesson plans, lack of appropriate teacher training and support and the amount of teacher time taken up with computer maintenance and technical problems [4].

In the context of the Malaysian Smart School Programme, similar critical problem areas were noted from findings gathered from focused-group sessions with teachers and school administrators [5].

The issues are as the following:

- Training programmes have been focused on application training. Teachers are ICT competent but have little exposure to integrating ICT devices and content into their lessons.

- One size fits all approach of deployment does not prove to work effectively as each school is unique. This is further aggravated with the deployment that has not necessarily been followed up with monitoring of usage.

- Teachers have also been overwhelmed with technical problems which often frustrate them and trigger resistance to using ICT and technology assisted methods.

- While teachers have often been criticized for not utilizing the ICT provisions enough, the lack of clear indicators further inhibited motivation to use ICT.

4 The Smart School Qualification Standards: The Measuring and Monitoring Tool

The analysis of the root causes clearly points to the need to strengthen the eco system of the Smart School programme. While existing structure for policy decisions and support system were leveraged and consolidated, necessary strategies to address the root causes were identified as the following:

Professional development - training on integrating ICT devices and ICT-based content in teaching and learning activities was intensified.
Monthly on-site monitoring was introduced to address specific school-based issues and multi-channel communication for regular monitoring conducted by subject-matter experts from higher educational institutions and MOE officers from the State Education Departments to address gaps of the remote and irregular monitoring.

A Centralised Service Desk (CSD) that provided technical support for the schools was established to ensure teachers could focus on delivering teaching and learning activities.

While all of the above programmes have been designed and implemented, there was the obvious need for a monitoring and measuring of whether or not schools have made progress from these interventions. For this, the Smart School Qualification Standards (SSQS) [6] was developed by a consultative group comprising mainly MDeC and MOE representatives with inputs from the industry. The SSQS would serve as the main measuring tool to inform schools of their level of ICT utilization and identify their strengths and weaknesses in four key performance indicators, utilization which weightage is 40%, human capital 40%, applications 10%, and infrastructure 10%. Groups accounted for in the SSQS are school administrators, selected teachers, and students.

The SSQS is a turning point in the effort to make all schools smart. It is a measuring and monitoring tool that has provided both the schools and decision makers with the direction for moving forward in the implementation of the smart school programme at the school level as well at the central decision making level.

5 SCHOOL-BASED STRATEGIES

Based on the SSQS, a star rating of 1 to 5 was identified. 1 is basic, 2 basic plus, 3 median, 4 advanced, and 5 advanced plus, being the highest rating. The assessment is done by an online survey and data triangulated with an on-site verification. The school rating is done once and in mid year.

In order to ensure schools are utilizing ICT in meaningful ways and that they are adequately prepared for the administration of the SSQS, various programmes have been introduced in collaboration with MOE. These programmes are designed to equip schools with the support to develop their school-based strategies.

School strategies are to ensure better learning and teaching towards improved learning performance. The programmes that support the school-based strategies are summarized as the following:

- Champions of Transformation
The school leaders as the champion at the school level play a significant role. They are required to lead and inform their respective role players of the plan, their specific responsibilities, the timeline, and the targets. This program is implemented through several change management sessions that are conducted centrally involving all school leaders and on site where experts and MOE officers would assist school leaders in developing school-based strategies.

- **Benchmarking Visits**

Schools with best practices for the implementation of the smart school programme are identified for visitations by other neighbouring schools. Through these visits, teachers and school leaders get to see first-hand experience on the actual implementation of school-based strategies.

- **Smart Brigade**

The Smart Brigade programme is a special programme to ensure a segment of the student population could contribute to sustaining the ICT culture in the schools. The programme is designed as a co-curriculum activity in schools to encourage interest to pursue a career in ICT, to develop interest in ICT, and to develop ICT skills amongst students.

- **Peer Coaching or Buddy**

Each school from amongst the 88 smart schools with best practices is paired with another school. The school leaders will communicate on specific issues and provide peer guidance for the less experience counterpart.

- **Knowledge Sharing**

Knowledge sharing sessions are conducted by buddy schools. Through the knowledge sharing sessions, teachers will share best practices on utilizing ICT for teaching and learning activities. Lesson plans and teaching and learning materials are shared during these sessions.

- **School-Based ICT Plan**

The above programmes contribute to schools strengthening and sustaining the momentum of ICT utilization. Taking all of the activities into consideration, the school leaders will lead their schools in the development of an ICT plan. The plan would refer to the baseline star rating, which highlights the strengths and weaknesses of the school. School-based strategies are then developed focusing on strengthening the weak areas.

Subject-Matter Experts are engaged to conduct on-site diagnosis of the weak areas, assist the schools in drawing up their ICT Plan. The subject-matter experts would gather once a month to report on the schools' progress and
challenges to MDeC and the MOE. Peer reviews of reports are also conducted during the sessions.

6 OUTCOMES

Given the large number of schools and their geographical spread across the country, MOE and MDeC have adopted an approach of creating a multiplier effect from the catalyst role in mentoring other schools. The catalyst schools contribute to the exponential growth of smart schools.

The SSQS had provided a clear target for schools to emulate the catalyst schools. Since the implementation of the SSQS in 2008 to all schools, there have been some clear outcomes as the following:

A. Increase in the Number of Catalyst Smart Schools

The catalyst schools are now mentoring their neighbouring schools to assist them in their process of increasing their smart school practices. The mentored schools will mentor other schools located around the areas. This will provide the multiplier effect. This mentoring is led by the State Education Department where best practices for rapid multiplier effect are being gathered.

The original cluster of 88 catalyst smart schools has now grown to an additional 50 catalyst smart schools which are located in the rural areas. The rural catalyst smart schools will assist other rural schools.

B. Increase in Targeted Competencies

With the various supporting programmes, school-based strategies and the SSQS as a tool to monitor and measure schools’ progress, there has been a recognizable increase in the utilization of ICT across over 8,413 schools which went through the recent rating exercise conducted by the MOE. Of this, 7,525 schools are rated between 3 and 5 star or are at the average and advanced practices using ICT.

As earlier pointed out, the outcomes of smart schools are focused on equipping teachers and students with 21st Century Skills which are effective communication, critical thinking, problem solving, collaboration and technology and media literacy.

From the recent rating exercise conducted by the MOE, schools have shown that they have achieved the average level for most of the competencies except for the collaboration skill which is at 2 star. The collaboration skill at schools now is focused on building the capacity at the school level and not collaborating externally. Schools are expected to be more prepared for external collaboration at a latter period once they have achieved a more advanced level for most of the competencies.

C. Clear Future Targets
With the findings on the current competency level, decision makers are now able to determine the realistic targets for all the skills. Taking into consideration the current status of rural and remote schools, it has been determined that the realistic target for all skills is 4 star and 3 star for collaboration.

With a clear guide and mechanism, on-going support, and regular monitoring, schools can be driven to optimize the provision of ICT.

7 CHALLENGES

Sustaining schools' culture of using ICT in their relevant activities remains a challenge for the following reasons:

A. Movements of School Leaders

The transfer of principals and headmasters to other schools often leave schools with a vacuum in terms of leadership. New leaders often require an introduction to the whole process. Teachers also have to follow on the new direction preferred by the new leaders. This transition can cause a break in the momentum.

B. Resistance to Change

There will be some teachers who form the resistant circle. This requires constant change management strategies at the school level. If not addressed, this circle can draw others and hamper the transformation process.

REFERENCES


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Dr Norrizan Razali obtained all her qualifications in the US, with her PhD from the University of Pennsylvania. During her time as Senior Analyst at Institute Strategic & International Studies (ISIS), Dr Norrizan Razali managed two projects for the Ministry of Education, Malaysia: the World Bank Funded project Polytechnic Development Study and the Asian Development Bank Technical Education Project.

At the Multimedia Development Corporation (MDeC), she has managed most of the Smart School programmes for the past 8 years. She has played a key role in the Uplifting of 88 Benchmarked Smart Schools from year 2006-2008, and other programmes to support the implementation of the smart school initiative.

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