Smart School Qualification Standards (SSQS)

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Background

Nothing is more critical to Malaysia's future than education. The Government is committed to continue its investment in the future of this nation through education-related policies that will boost Malaysia's global competitiveness. A quality education system will drive innovation, competitiveness and set the stage for Malaysia's growth in the global economy.

ICT is intended to form the nucleus that supports the reinvention of the whole nation towards becoming a knowledge-based economy by 2020. ICT is to be used both as a tool for education and for revolutionising the education system. Skills such as digital literacy, effective communication, critical thinking and problem solving will empower Malaysians and compete more effectively in this increasingly technology-based world.

The Smart School Qualification Standards (SSQS) and its associated Star Ranking, mark a critical turning point in the evolution of Malaysia's education system. The SSQS introduces a two-pronged strategy based on guidance and training and helps educators in Smart Schools better understand their role and expectations.

As the use of ICT continues to become more pervasive in schools, the SSQS sets benchmarks that will measure the successful transformation of the national education system. By monitoring the quality of the national education system, the Ministry of Education and Multimedia Development Corporation (MDeC) can focus on raising the bar on the quality of the education system, with better policy planning and programme improvements.

Educators now have greater access to ICT resources through training workshops, online value adding applications and on-site guidance. The SSQS provides the necessary stimulus for change within the education system and ensures a better return on investment from the deployment of ICT resources in schools throughout Malaysia.

The SSQS is unique in that is possibly the first set of indicators co-created by the Ministry of Education and MDeC a government-driven organisation for national roll-out and development, as opposed to international comparison and benchmarking.

The SSQS will empower educators to inspire a new generation of students that will be better equipped to fuel the nation's evolution towards developing a knowledge-based economy.

About MoE's Role in MSC Malaysia

The Ministry of Education, Malaysia, is the lead agency of the Smart School Flagship Application, one of the original seven flagship applications of the MSC Malaysia launched in 1997.

From 1997 to 2002, the Ministry worked with MDeC, other Government agencies and the private sector to plan, implement, monitor and evaluate the Smart School Pilot Project.

As the lead agency of a flagship application, the Ministry is a member of the MSC Malaysia Flagship Coordination Committee and the MSC Malaysia Implementation Council which oversee the planning and implementation of flagship applications and other initiatives relating to the MSC Malaysia.

In addition, the Minister of Education attends the MSC Malaysia International Advisory Panel which meets every two years.

The Ministry is also a member of several committees, which deal with specific matters relating to the use of ICT.

About MSC Malaysia

MSC Malaysia, formerly known as the Multimedia Super Corridor (MSC) was conceptualised as an exciting initiative to spur the nation's entry into the burgeoning global Information & Communication Technology industry.

The MSC Malaysia has since grown into a thriving and dynamic ICT hub, hosting more than 2192 multinationals, foreign-owned and home-grown companies focused on multimedia and communications products, solutions, services and research and development.

With this unique corridor, leading ICT companies from around the world are motivated and incentivised to locate their industries in the MSC Malaysia and undertake research, develop new products and technologies and export from this base. The MSC Malaysia is also an ideal growth environment for Malaysian ICT Small and Medium Enterprises to transform themselves into world-class companies. Furthermore, the MSC Malaysia welcomes countries to use its highly advanced infrastructural facilities as a global test-bed for ICT applications and a hub for their regional operations in Asia.

Four (4) innovative developmental flagship applications were put in place to accelerate ICT growth and development in the areas of Telehealth, Smart Card, Electronic Government and the Smart School flagship which implementation is led by the Ministry of Education.

To spark progress, MSC Malaysia-status is awarded to both local and foreign companies that develop or use multimedia technologies to produce or enhance their products and services and for process development. In return, MSC Malaysia-status companies enjoy a set of incentives and benefits from the Malaysian Government backed by the ten Bill of Guarantees.

In 2004, the MSC Malaysia National Rollout began, spreading the MSC Malaysia benefits and value propositions nationwide and reaching out to both industry and the community-at-large. By the year 2020, the MSC Malaysia Agenda will be extended to the whole country. It will be a national transformation for Malaysia to become a Knowledge-based Economy and Society, as envisaged in Vision 2020.

Multimedia Development Corporation Sdn Bhd (MDeC)

Your gateway to the MSC Malaysia is the Multimedia Development Corporation (MDeC), a high-powered 'one-stop agency', focusing on ensuring the success of the MSC Malaysia and the companies operating in it.

MDeC has been incorporated under the Companies Act of Malaysia, owned and funded by the Government. At MDeC, the entrepreneurial efficiency and effectiveness of a private company are combined with the decision-making and authority of a high-powered government agency.

Its role is to advise the Malaysian Government on legislation and policies, develop MSC Malaysia-specific practices, and set breakthrough standards for multimedia operations. It also promotes the MSC Malaysia locally and globally, as well as supports companies which are located within the MSC Malaysia.

MDeC is dedicated to ensuring the MSC Malaysia is the world's best environment to harness the full potential of ICT. MDeC is a champion, facilitator and partner. We champion the merits of the MSC Malaysia, facilitate the entry of companies and partner with the Government and the private sector in realising both a vision and an opportunity.

MDeC ensures that companies interested in entering the MSC Malaysia have what they need to succeed. MDeC stands ready to work with investors, foreign and local, big or small, to ensure that the MSC Malaysia fulfils its promises.

Smart School Qualification Standards (SSQS)

INTRODUCTION

Since the Smart School initiative was launched in July 1997 as one of the seven flagships of the MSC Malaysia, much has been achieved, but one of the most critical includes the establishment of the '88 Smart Schools' as a consequence of the pilot project by the Ministry of Education (MoE).

These 88 Smart Schools were initially identified to act as the nucleus for the reference of Smart School concepts, materials, skills, and technologies developed by the MoE.

However, analysis such as the Impact Study (2005) indicated that the infrastructure set up by the MoE, including the provision of computers, applications and ICT Coordinators to the various schools, required enhancement in management and optimisation of utilisation.

As such in April 2006, the National IT Council chaired by the Prime Minister endorsed the Minister of Education's proposal that MDeC create a systematic transformation of the selected '88 Smart Schools' into model schools. This included promoting best practices in technology-enabled teaching, learning and school management.

MDeC was given the mandate to develop an easy model for replication by the 88 Smart Schools. These 88 Smart Schools will in turn act as role models to showcase utilisation and maximisation of ICT usage in education through the infrastructure provided by the MoE. Based on a 2-pronged approach, MDeC together with the MoE has provided guidance and training on basic management and transformation principles of positive "Monitoring" and "Value-adding", to achieve this goal.

In order to encourage active interest and participation of schools, a measured and graded benchmark of ICT utilisation of the Smart Schools was created. There are several monitoring tools planned but of prime importance is the Smart School Qualification Standards (SSQS) based on Star Ranking. In addition, training workshops, online value-adding applications and on-site guidance are being implemented to reinforce ICT usage in education. In June 2006, the Minister of Education agreed with MDeC on the establishment of the SSQS based on Star Ranking.

ICT BENCHMARKING IN EDUCATION

As ICT becomes widespread, schools as well as education system as a whole need to develop performance indicators to monitor the use and outcomes of the technologies. These indicators are needed specifically to monitor the types of ICT resources available, the extent and nature of professional development efforts, and changes in teaching/learning practices.

The indicators show how ICT should be used not only as a basic operational tool (such as the number of computers and online connectivity) but also as a communication tool which promotes the development of:

- creativity
- interactivity
- collaborative learning
- critical thinking
- problem-solving

It is hoped that eventually educational policy makers and administrators will streamline the implementation of these performance indicators into their national education policies and information systems management. It is envisaged to provide not only a snapshot of current conditions but a stimulus for change.

Performance indicators in education have traditionally focused on academic results, such as the League Tables in the UK. There are very few comparable standards and measurements for ICT penetration and utilisation in education on a national basis.

Key findings on performance indicators for ICT in education in other countries are highlighted below:

- Second Information Technology in Education Study (SITES), as part of Industry Canada's SchoolNet and Computers for Schools programmes shows a clear example of how the SSQS can work. SITES was developed to address the increasing use of ICT in Canada's school system and challenges faced. In an effort to generate vital data, Canada, along with 27 other countries participated in SITES. SITES provides valuable benchmark information against which future progress can be measured. The survey captures data on the implementation of ICT in education systems at different stages.

- Typically, national initiatives are part of a broader regional or international benchmarking programme. The guide developed by the Organisation for Economic Co-Operation and Development (OECD), "Education at a Glance – OECD Indicators", is an example of a collection of indicators that represent the consensus of professional thinking on how to measure the current state of education internationally.

- UNESCO's Asia and Pacific Regional Bureau for Education provides a situational analysis regarding the development and impact of ICT in Education. It offers methods of collecting indicators, comparisons of indicator themes in selected countries as well as several case studies on the use and impact of ICT in education.

- One of the users of UNESCO's programme is African SchoolNet. The African Education Knowledge Warehouse (AEKW) is a pan-African education portal which services African SchoolNet practitioners, policymakers and school-based communities on ICTs in education across Africa.

- In Europe, the eEurope+ Final Progress Report provided a set of indicators to benchmark the introduction of new technologies into education and everyday life. The report showed that all Acceding and Candidate Countries have made significant efforts towards the implementation of a knowledge-based society but also highlights the need to stimulate the development of interactive, multi-media rich and multilingual content, as a driver for broadband deployment. The implementation of e-government services, the integration of ICT training into every students' education and the deployment of lifelong ICT training were other measures recommended.

STRATEGIC OVERVIEW OF THE SMART SCHOOL QUALIFICATION STANDARDS (SSQS)

The SSQS is unique in that it is possibly the first set of indicators co-created by the MoE and MDeC a government organisation for national use and development, as opposed to international comparison and benchmarking.

While locally developed and driven, the SSQS is globally positioned, as it is consistent with the 2003 World Summit on the Information Society (WSIS) in Geneva which

specifically highlighted the need for effective performance monitoring and evaluation tools on the performance of ICT for Development programmes, particularly in the education sector.

Objectives of the SSQS:

- To increase utilisation of ICT in schools
- To develop a system (set of indicators) to measure ICT integration in administration and teaching and learning
- To provide a basis for policy planning and programme improvements
- To raise standards in education
- To serve as a catalyst for educational change
- To empower teachers and learners

In any transformation exercise, benchmarks and indicators of success and failure are required to measure the way we conduct our work, projects and programmes. When the exercise is transforming education through the use of ICTs, indicators focused on ICT are given emphasis.

Efforts to integrate ICT in education are widespread globally, but to determine the national impact of ICT, a localised set of indicators or criteria is required for measurement and ranking. Performance indicators to monitor the use and outcomes of technologies also provide useful information for responding to challenges that may arise.

The relationships between the technology use and educational development, empowerment of teachers, changes in teaching and learning processes, and student learning are demonstrated through the use of indicators. It is important to note that using technology is not an end in itself, but a means to promote educational outcomes, creativity, empowerment of learners and teachers, and the development of resourceful learners and problem solvers. In order to assess these outcomes, appropriate measurement tools and indicators are needed.

To transform a school, no matter how academically brilliant, from a non-ICT oriented teaching and learning environment, to one which maximises and promotes the teaching and learning advantages of ICT to the fullest, clear direction and guidance must be given. This includes the training of both the educators (who use the system) and the technicians (who maintain the system).

Strategically, the thrust of the entire programme is one of monitoring and guidance (as a form of subtle and gentle enforcement) activities simultaneously backed by value-adding (or reinforcement) support in identified weak areas.

Monitoring Programmes – are "coaching" activities carried out on-line (via computers) and on-site.

Value-Adding Programmes – are "reinforcement" activities which include training workshops and infrastructure support, such as:

- Smart School Champion for School Leaders
- Professional Development for teachers
- Technical Support Enhancement
- Peer Coaching and Buddy System
- Change Management programmes
- Smart Brigade

STAR RANKING METHODOLOGY

The Star Ranking is a monitoring tool. A 4-step methodology has been developed for assessing the 10,000 schools and deriving the Star Ranking of each school:

1. **Key Performance Indicators (KPIs)**
   The first step to the methodology is to establish Key Performance Indicators of the ICT Focus Areas. These KPIs set the accepted conditions and assign scores upon which the Star Ranking is based.

2. **Survey and Appraisal**
   Having established the KPIs, each Smart School will be surveyed to ascertain the conditions of each ICT Focus Area. The survey will be conducted once a year through the online monitoring system that captures live data.

3. Smart School Qualification Standards (SSQS)

The SSQS outlines the ICT Focus Areas each school is appraised on. Each area carries its own weightage reflecting its significance in the SSQS. The areas are:

☑ Utilisation	40%
☑ Human Capital	40%
☑ Applications	10%
☑ Technology Infrastructure	10%

To qualify as a Smart School, the 10,000 schools must achieve the minimum conditions 3-star specified for each KPI within the ICT Focus Areas.

☑ **Utilisation:** monitors the extent to which the school makes use of ICT in its operation, management, teaching and learning activities. Utilisation accounts for 40% of the Star Ranking appraisal as it forms the integral part of transformation.

Examples of KPIs within Utilisation are: Student-to-PC contact hours, courseware/ICT-based content integration by teachers for core subjects, School Management System updating, Educational TV content and Learning Management System (LMS) usage, and student completion of self-learning materials.

- **Human Capital:** refers to the competency of end-users in integrating ICT in teaching, learning and/or administration. Human Capital accounts for 40% of the Star Ranking appraisal.

  Examples of KPIs for Human Capital are: ICT Co-ordinators' competency, core-subject teachers' ICT competency, use of ICT in dissemination of information, smart partnerships, use of multimedia in teaching, the students' ICT competency and awareness of the availability of educational courseware.

- **Applications:** refers to the various applications provided by the MoE and others that the schools have adopted. It accounts for 10% of the Star Ranking appraisal.

  Examples of KPIs for Applications are: at least 5 modules used for school management, LCMS and MoE courseware are used for teaching, and website presence and maintenance.

- **Technology Infrastructure:** not only audits the provision of the infrastructure itself (provided by MoE) but also looks at maintenance and support of the infrastructure within the schools. As a large portion of the infrastructure provision is determined by MoE at the central level, this focus area accounts for only 10% of the Star Ranking appraisal.

  Examples of KPIs for Technology Infrastructure are: PC-to-Student ratio, PC-to-Teacher ratio, Projector-to-class ratio, PC accessibility, LAN & WAN, and technology downtime.

4. Star Ranking

The goal of this exercise is the once in a year Star Ranking, where all schools are measured in the ICT Focus Areas and ranked between 1 to 5 star.

Schools which do not qualify for any Star Ranking may regard that as a clear indication that they do not qualify as smart schools, and urgent steps need to be taken to regain position on the development track.

Schools which show a steady improvement or maintain an exemplary standard in the key areas will be positioned as ideal Smart Schools.

It is hoped that the 10,000 schools will make use of the ranking system to qualify themselves as 5-Star Smart Schools.

The Star Ranking is awarded based on a unified score from the indicators to:

- Serve as a device for monitoring
- Provide information for specific actions to uplift the integration of ICT in schools
- Facilitate decision and policy making towards making all schools smart

The Star Ranking are:

BASIC 	Schools with merely basic conditions across all indicators
BASIC PLUS 	Star ranking for schools with basic features, with slight additions but falling below the average conditions for all indicators.
MEDIAN 	Star ranking awarded to Smart Schools with fair or average conditions of all the indicators.
ADVANCED 	A seal of approval awarded to Smart Schools with good or advanced conditions for most indicators.
ADVANCED PLUS 	The highest approval ranking, awarded to Smart Schools with advanced conditions for most indicators.

Smart School Qualification Standards (SSQS)

Smart School Indicators / School Ranking	Indicators	BASIC ★ (0 < x < 20%)	BASIC PLUS ★★ (20% ≤ x < 40%)	MEDIAN ★★★ (40% ≤ x < 60%)	ADVANCED ★★★★ (60% ≤ x < 80%	ADVANCED PLUS ★★★★★ (x ≥ 80%)
UTILISATION (40%) – ICT integration in teaching, learning and school administration	1. Usage of ICT-based applications by administrators in school management	1 application	2 applications	3 applications	4 applications	≥ 5 applications
	2. Usage of Web-based School Management System/other ICT-based system by administrators in school management	once a month	once in 3 weeks	once in 2 weeks	once a week	daily
	3. Usage of ICT equipment (other than computer) by administrators in school management	once a month	once in 3 weeks	once in 2 weeks	once a week	daily
	4. Usage of electronic tools (email, SMS, etc) for dissemination of information by administrators	once a month	once in 3 weeks	once in 2 weeks	once a week	daily
	5. Integration of technology-based materials/ platforms by teachers in teaching & learning for each subject	≤ 1 period per month	2-3 periods per month	4-5 periods per month	6-7 periods per month	≥ 8 periods per month
	6. Usage of Learning Management System by teachers in teaching & learning	≤ 60 minutes per month	≤ 61-120 minutes per month	≤ 121-180 minutes per month	≤ 181-240 minutes per month	≥ 241 minutes per month
	7. Usage of Educational TV content by teachers in teaching & learning	1 period per month	2 periods per month	3 periods per month	4 Periods per month	≥ 5 periods per month
	8. Usage of ICT equipment (other than computer & TV) by teachers in teaching & learning	1 period per month	2 periods per month	3 periods per month	4 periods per month	≥ 5 periods per month
	9. Usage of internet by teachers for seeking information in teaching & learning	≤ 60 minutes per month	≤ 61-120 minutes per month	≤ 121-180 minutes per month	≤ 181-240 minutes per month	≥ 241 minutes per month
	10. Usage of ICT-based content by teachers to develop new teaching materials	Once in 2 months	Once a month	Once in 3 weeks	Once in 2 weeks	Once a week
	11. Student-PC contact hours during school hours for any subjects	≤ 60 minutes per month	≤ 61-120 minutes per month	≤ 121-180 minutes per month	≤ 181-240 minutes per month	≥ 241 minutes per month
	12. Usage of Learning Management System by student	1 assignment per month	2-3 assignments per month	4-5 assignments per month	6-7 assignments per month	≥ 8 assignments per month
	13. Usage of self-learning modules by student	1 title per month	2-3 titles per month	4-5 titles per month	6-7 titles per month	≥ 8 titles per month

Smart School Indicators / School Ranking	Indicators	BASIC ★ (0 < x < 20%)	BASIC PLUS ★★ (20% ≤ x < 40%)	MEDIAN ★★★ (40% ≤ x < 60%)	ADVANCED ★★★★ (60% ≤ x < 80%	ADVANCED PLUS ★★★★★ (x ≥ 80%)
UTILISATION (40%) – ICT integration in teaching, learning and school administration	14. Student-PC contact hours after school hours for learning purposes	≤ 60 minutes per week	≤ 61-120 minutes per week	≤ 121-180 minutes per week	≤ 181-240 minutes per week	≥ 241 minutes per week
	15. Usage of Resource Centre/Access Centre for ICT-related work by student	Once a month	Once in 3 weeks	Once in 2 weeks	Once a week	Daily
	16. Update of activities and data on the relevant modules by IT Coordinator in School Management System/other ICT-based system	Once a year	Once in 6 months	Once every 3 months	Monthly	Weekly
	17. Update of school website/portal by IT Coordinator	Once a year	Once in 6 months	Once every 3 months	Monthly	Weekly
HUMAN CAPITAL (40%) – ICT competency of Administrators, Teachers, IT Coordinators and Students	1. ICT competency level of Administrator	Very Low	Low	Average	High	Very High
	2. Number of ICT-related courses attended by Administrator in the last 3 years	1	2	3	4	≥ 5
	3. Frequency of ICT Smart-partnership programme with community	once a year	twice per year	4 times a year	6 times a year	monthly
	4. Number of in-house ICT training activities conducted by school	1-2 per year	3-4 per year	5-6 per year	7-8 per year	≥ 9 per year
	5. Frequency of dissemination of information regarding ICT by Administrator	once a year	twice a year	6 times a year	monthly	weekly
	6. Frequency of change management conducted by Administrator	once a year	twice a year	4 times a year	6 times a year	monthly
	7. Number of types of ICT-related support from the community	1 per year	2 per year	3 per year	4 per year	≥ 5 per year
	8. Number of innovative programmes conducted in schools	1 per year	2 per year	3 per year	4 per year	≥ 5 per year
	9. ICT competency level of teachers	Very Low	Low	Average	High	Very High
	10. Additional ICT competency level of teachers	Very Low	Low	Average	High	Very High

Smart School Indicators \ School Ranking	Indicators	BASIC ★ (0 < x < 20%)	BASIC PLUS ★★ (20% ≤ x < 40%)	MEDIAN ★★★ (40% ≤ x < 60%)	ADVANCED ★★★★ (60% ≤ x < 80%	ADVANCED PLUS ★★★★★ (x ≥ 80%)
HUMAN CAPITAL (40%) – ICT competency of Administrators, Teachers, IT Coordinators and Students	11. Number of ICT-related courses attended by teachers in the last 3 years	1	2	3	4	≥ 5
	12. Number of ICT workshops/peer coaching/ knowledge sharing activities conducted by teachers	1 per year	2 per year	3 per year	4 per year	≥ 5 per year
	13. Frequency of dissemination of information regarding ICT by teachers	once a year	twice a year	6 times a year	monthly	weekly
	14. ICT competency level of IT Coordinator	Very Low	Low	Average	High	Very High
	15. Number of ICT-related courses attended by IT Coordinator in the last 3 years	1	2	3	4	≥ 5
	16. Number of in-house ICT training courses conducted by IT Coordinator	1-2 per year	3-4 per year	5-6 per year	7-8 per year	≥ 9 per year
	17. Frequency of dissemination of information regarding ICT by IT Coordinator	once a year	twice a year	6 times a year	monthly	weekly
	18. ICT competency level of students	Very Low	Low	Average	High	Very High
	19. Additional ICT competency level of students	Very Low	Low	Average	High	Very High
	20. Number of sources Student refers to for ICT-related knowledge	1	2	3	4	≥ 5
APPLICATION (10%) – IT Coordinator for the schools	1. Number of modules for school management	3	4	5	6	> 6
	2. Number of application for the school	1	2	3	4	> 4
	3. A system to manage learning content for teaching and learning	1	1	1	1	1
	4. Number of software for the development of teaching and learning materials	1	2	3	4	> 4
	5. Type of courseware/ICT-based learning material	2 type	3 types	4 types	5 types	> 5 types

Smart School Indicators / School Ranking	Indicators	BASIC ★ (0 < x < 20%)	BASIC PLUS ★★ (20% ≤ x < 40%)	MEDIAN ★★★ (40% ≤ x < 60%)	ADVANCED ★★★★ (60% ≤ x < 80%	ADVANCED PLUS ★★★★★ (x ≥ 80%)
APPLICATION (10%) – IT Coordinator for the schools	6. A website for the school	One school website or a blog	One school website/a blog and updated	One school website, updated with one of the following criteria: • maintained • interactive • downloadable materials	One website, updated with two of the following criteria: • maintained • interactive • downloadable materials	One website, updated with all of the following criteria: • maintained • interactive • downloadable materials
	7. An email application for the school	Email application for administrators	Email application for administrators and teachers	Email application for all staff	Email application for all staff and directory for the school	Email application for all staff, directory and email groups for the school
INFRASTRUCTURE (10%) – Administrators and IT Coordinators	1. Number of functioning computers in the school	5-10	11-15	16-20	21-30	≥31
	2. Computer: Pupil ratio	1: >20	1: 15-19	1: 10-14	1: 5-9	1: 1-2
	3. Computer/Notebook: Teacher Ratio	1: >45	1: >22	1: 7-9	1: >4-6	1: ≤ 3
	4. LCD Projector: Class Ratio	1: >20	1: 16-20	1: 11-15	1: 5-10	≤ 5
	5. Accessible computer locations	1	2	3	4	5
	6. Percentage of Computers not working more than 24 hours	≥ 50%	30% - < 50%	20% - < 30%	10% - < 20%	< 10%
	7. Local Area Network connectivity	≤ 2	3-4	5-6	>6	≥7 & wireless
	8. Standard maximum downtime	>7 times/week	5-6 times/week	3-4 times/week	1-2 times/week	0 time/rarely
	9. Internet accessibility	1 location	2 locations	3 locations	4 locations	≥5 locations
	10. Frequency of Maintenance activity	Once a month	Once every 3 weeks	Once every 2 weeks	Once a week	Daily