Chief Executive's Award for Teaching Excellence (2012/2013)
Excellence Indicators for Teaching Practices for the
Science Education KLA

Foreword

The *Excellence Indicators for Teaching Practices for the Science Education Key Learning Area* are compiled for use as reference in assessing nominations for the Chief Executive's Award for Teaching Excellence (CEATE) (2012/2013).

In drafting the Indicators, we have consulted a number of references including curriculum documents (see References on pages 11-13). The Indicators have been formulated and structured in a way that reflects the complexities of teachers' work and the diverse nature of teachers' competencies.

For the purposes of the CEATE, teaching excellence means teaching practices that are –

(i) outstanding and/or innovative and proven to be effective in enhancing students' motivation and/or in helping students to achieve the desired learning outcomes; or
creatively adapted from exemplary teaching practices from elsewhere to suit the local (i.e. school-based and/or student-based) context, with proven effectiveness in enhancing students' learning outcomes;

(ii) based on a coherent conceptual framework, showing reflective practices;

(iii) inspiring and can be shared with colleagues to improve the quality of education; and

(iv) instrumental in achieving the learning targets of the Science Education Key Learning Area (i.e. developing students' curiosity and creativity, as well as interest in science; developing their ability to inquire and solve problems; and enhancing the scientific literacy of students).

The Indicators fall within four domains, namely, (1) Professional Competence, (2) Student Development, (3) Professionalism and Commitment to the Community, and (4) School Development. The first two domains focus on recognising teaching excellence and the other two on fostering teachers' professional development and building a culture of teaching excellence.

The Indicators are to be used only as a framework for recognising excellent teaching practices; they are not intended to prescribe a rigid model of excellence for every teacher. We hope that the Indicators will not only be used as an assessment tool, but may also highlight the qualities of an accomplished teacher in the area of science education, so as to motivate teachers to pursue professional excellence.

All awardees must possess the essential qualities of a professional teacher such as professionalism, loving and caring for students. Every nomination will be assessed according to the four domains mentioned above by adopting a **holistic approach** based on professional knowledge and judgment. However, as the focus of CEATE is on learning and teaching, we are looking for exemplary and effective teaching practices that are inspiring and can be shared. In assessing group nominations, we will also consider the effectiveness of teamwork as measured by the contribution of each group member, interactions among group members, and how the concerted efforts of group members have contributed to the desired outcomes.

The Assessment Working Group

Chief Executive's Award for Teaching Excellence (2012/2013)

October 2012

Excellence Indicators for Teaching Practices for the Science Education Key Learning Area

1. Professional Competence Domain

Area	Performance Indicator	Examples of Excellence
Curriculum	1.1 Curriculum Design and Organisation	The teacher is able to : ● plan and develop a coherent, balanced, systematic, flexible and well-articulated school-based curriculum, with appropriate adaptation to cater for learner diversity and to enhance effective learning of science; ● promote independent and lifelong learning through developing students' learning skills and strategies, to enable them to construct their knowledge effectively, and to develop their ability to think scientifically, critically and creatively; ● infuse into the curriculum elements of the Four Key Tasks to promote the development of students' generic skills, positive values and attitudes and hence whole-person development; ● take into consideration current or innovative pedagogical practices, curriculum emphases and priorities, and purposefully incorporate them into curriculum planning for implementation; ● incorporate into the curriculum intellectual explorations of scientists, leading students to analyse and assess the line of thought, recognizing the elements of its logic, its strength and its limitations to enable students to develop an appreciation and understanding of the nature of science; ● demonstrate curriculum leadership in strengthening links between the different disciplines of science and connections with other Key Learning Areas, and take forward various learning and teaching activities in different context, providing multifarious scenarios for students to apply their science knowledge;

Area	Performance Indicator	Examples of Excellence
		● adopt a learner-centred approach when developing learning materials and organising co-curricular activities to complement the formal science curriculum, to promote life-wide learning and enhance the scientific literacy of students; and ● incorporate challenging learning elements into the curriculum to cater for students with a strong interest and talent in science.
	1.2 Curriculum Management	The teacher is able to : ● formulate effective mechanism to monitor and evaluate curriculum implementation, take forward concrete follow-up measures and take the initiative to share the experiences with colleagues to improve the quality of education; ● take a leading role in working closely with panel members and / or other science teachers to develop a holistic plan for school-based curriculum to ensure vertical and lateral coherence among different science subjects and between science and other subjects; ● participate actively in sharing and exchanging of ideas and resources with colleagues on curriculum and pedagogical content knowledge to enhance learning and teaching effectiveness; and ● collaborate with colleagues in reviewing and improving the school-based curriculum and to make flexible and effective use of learning time and quality resources to cater for learner differences and to enrich students' learning experiences.

Area	Performance Indicator	Examples of Excellence
Teaching	1.3 Strategies and Skills	The teacher is able to : ● plan, organise and take forward effectively the teaching work to ensure students' attainment of learning targets which are appropriately set in the light of students' varied abilities and needs; ● adopt a learner-centred approach to design learning activities that are related to students' daily life, and to use a variety of strategies to provide them with diversified learning experiences, to strengthen motivation, enable them to construct their knowledge, and establish positive values and attitudes; ● adapt creatively or adopt innovative and effective teaching strategies that enhance students' learning interest and outcomes, and promote the development of students' inquiry, communication, reasoning, conceptualisation, critical-thinking, problem-solving, and high order thinking skills; ● use a wide range of resources and teaching strategies effectively to stimulate students' curiosity and active participation in science learning; ● demonstrate good classroom performance skills, attend to students' learning needs and performance; and maintain a safe, harmonious and inspiring learning atmosphere; ● design and take forward a wide range of activities that actively involve their students in the scientific processes of inquiry and investigation in which students take responsibility of their own learning; and ● reflect and revise teaching strategies to cater for learner diversity, motivating students to seek continuous improvement and strive for excellence in their studies.

Area	Performance Indicator	Examples of Excellence
	1.4 Professional Knowledge and Attitude	The teacher is able to : ● display a high level of informed professional knowledge of the current curriculum objectives, subject content and apply pedagogical content knowledge effectively; ● model and emphasise the skills, attitudes, and values of scientific inquiry; ● be a reflective practitioner and strive for self-improvement, demonstrate the passion for science and commitment to teaching of the subject; ● assume different roles of a teacher, varying from a transmitter of knowledge to a resource person, facilitator, collaborator, advisor, counsellor, assessor, and consultant to foster students into self-directed, life-long learners; ● demonstrate genuine care and respect for students; recognise and value students' potential and achievement with appropriate expectations; and ● build up trust and rapport with students.

Area	Performance Indicator	Examples of Excellence
Performance Assessment	1.5 Assessment Planning and Use of Information	The teacher is able to : ● draw up a detailed assessment mechanism; make effective use of a wide repertoire of assessment modes and evaluation tools systematically, and align them with curriculum planning, student learning progression and other student-based or school-based contextual factors with due emphases on formative assessment; ● record and document assessment results systematically, and use them readily and effectively to improve learning and teaching, monitor students' progress, cater for learner diversity, review pedagogical practices and inform pedagogical planning and design; ● give timely, useful and positive feedback to students to help them sustain the momentum in learning and to identify strengths and weaknesses, and to guide them to build on strengths and overcome weaknesses; ● capitalise on self-assessment and peer assessment among students and to engage them in reflection and discussion to consolidate their learning and make improvement; and ● demonstrate self-reflective practices in regular review of the assessment mechanism and to relate assessment results to learning and teaching effectiveness for further improvement.

2. Student Development Domain

Area	Performance Indicator	Examples of Excellence
Student Development	2.1 Attitude	The teacher is able to : ● inspire students of different backgrounds and abilities, motivate them to learn and help them achieve the desired learning outcomes; ● stimulate students' curiosity and interest in science and develop their keenness to plan and carry out their own scientific investigations to research into issues related to science, technology, society and environment; ● strengthen students' sensitivity and confidence in applying science knowledge to daily life and their persistence in scientific investigations and problem-solving; ● lead students to appreciate the wonder and beauty of Nature; ● develop students' values and attitudes in conserving, protecting and maintaining the quality of the environment; ● lead student to appreciate the dynamic and evolutionary nature of scientific knowledge; ● encourage students to remain open-minded, respect others' views, collaborate and share ideas with others readily; and ● enrich students' learning experiences and make positive impact on their self-directed, lifelong learning, and whole-person development.

Area	Performance Indicator	Examples of Excellence
	2.2 Knowledge and Skills	The teacher is able to : ● develop students' imagination, creativity and spirit of exploration, as well as their independent, logical, critical and higher order thinking skills; ● develop students' ability to operate as scientists; this includes involving students in scientific investigation and practical work, research using a range of resources, evaluation of evidence, open-minded discussion and debate, and communicating using scientific language; ● develop students' generic skills and the ability to organise, analyse, conceptualise, reason and communicate using scientific knowledge; ● develop students' ability to make informed judgment, and become adept in dealing with scientific problems in everyday life; and ● develop students' ability to construct their knowledge, to learn how to learn, and to fulfil their potential in science.

3. Professionalism and Commitment to the Community Domain

Area	Performance Indicator	Examples of Excellence
Professionalism and Commitment to the Community	3.1 Contribution to the Profession and the Community	The teacher is able to : ● pursue continuous self-improvement and professional development; ● demonstrate good understanding and knowledge of current development in science education and education practices and present ideas to address the impact of related issues; ● produce exemplary teaching materials, involve in or contribute to educational studies to tryout teaching practices, or use different channels, such as writing articles, to publicise proven practices; ● introduce effectively new ideas and practices, with regard to contemporary education or learning theories/initiatives, to improve and promote the learning of science; ● set himself/herself as a role model; ● provide mentorship for novice teachers and contribute to school-based or community professional development; ● actively support other teachers, promoting collaboration and a sharing culture among colleagues; and ● provide active support to the teaching profession and the community, such as participating in and contributing to professional sharing activities, disseminating of good practices, and involvement in community services or voluntary work.

4. School Development Domain

Area	Performance Indicator	Examples of Excellence
School Development	4.1 Support to School Development	The teacher is able to : ● inspire colleagues and other stakeholders to work together to improve the learning and teaching of science; ● promote a sharing and collaborative culture among colleagues and stakeholders with a view to developing the school as a harmonious and professional learning community; ● contribute to developing close links with the community and stakeholders to support students' learning and school development; ● give active support to home-school collaboration; and ● take a leadership role in promoting, among colleagues, a consensus on and the actualisation of the school vision and mission through own exemplary practices and sharing of experiences; and in focusing energy on achieving continuous school development and realising the essence of the school culture and ethos through a variety of effective channels.

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