Chief Executive's Award for Teaching Excellence (2016/2017)
Excellence Indicators for Teaching Practices for the
<u>Science Education Key Learning Area</u>

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) (2016/2017).

In drafting the Indicators, we have consulted a number of references including curriculum documents (see References on pages 11-12).   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 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 (KLA) (i.e. developing students' curiosity and interest in science, scientific literacy as well as creativity; equipping students with the ability to inquire and solve problems; fostering students' ability to integrate and apply knowledge and skills with other related

disciplines; and nurturing students to become life-long learners in science for personal development).

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 serve 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 and loving concern for students. Each 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 (2016/2017)

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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 Planning and Organisation	The teacher is able to: • ensure vertical continuity and lateral coherence and take into account the key emphases of the ongoing renewal of school curriculum during holistic curriculum planning for science education, in order to align with school contexts, teachers' readiness and students' needs; • make appropriate curriculum adaptation to cater for learner diversity; • strengthen the connections between different subjects under Science Education KLA and develop diversified learning and teaching activities to allow students to apply their scientific knowledge to solve problems in different situations; • promote STEM[1] education by ensuring coherence and co-ordination among KLAs and strengthening students' ability to integrate and apply knowledge and skills (including "hands-on" skills); • adopt a learner-centred approach, make flexible use of lesson time, and arrange life-wide learning activities to enhance students' scientific literacy; and • incorporate challenging learning elements into the curriculum to cater for students with a strong interest and special talents in science.

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[1] STEM is an acronym combining the first letters of four academic disciplines, namely Science, Technology, Engineering and Mathematics. In the local curriculum context, STEM education is promoted through Science, Technology and Mathematics Education KLAs.

Area	Performance Indicator	Examples of Excellence
	1.2 Curriculum Management	The teacher is able to: • formulate an effective mechanism to monitor and evaluate curriculum implementation, take forward concrete follow-up measures and take the initiative to share experiences with colleagues, with a view to improving the quality of education; • take a leadership role in working closely with panel members and/or other Science Education KLA teachers to devise a holistic plan for the development of school-based curriculum to ensure vertical and lateral coherence among different science subjects and among Science Education KLA and other KLAs; • actively participate in the sharing and exchanging of ideas and resources on curricula and pedagogical content knowledge among colleagues to enhance learning and teaching effectiveness; and • collaborate with colleagues in reviewing and refining the school-based curriculum, and make flexible and effective use of learning time and curricular resources with good quality to cater for learner diversity and enrich students' learning experiences.
Teaching	1.3 Strategies and Skills	The teacher is able to: • design appropriate learning and teaching activities that allow students to integrate and apply knowledge and skills in finding solutions to problems through hands-on and minds-on experiences; • adopt a learner-centred teaching strategy to provide students with different learning experiences so that they can construct knowledge and develop positive values and attitudes; • adopt appropriate teaching and learning strategies to construct the scientific knowledge of students, help them understand the nature of science and develop science process skills, with a view to enhancing their science literacy;

Area	Performance Indicator	Examples of Excellence
		• use a wide range of teaching resources and strategies to effectively stimulate students' curiosity and interest about science, and motivate them to learn actively; • demonstrate good classroom practices, give attention to and care about students' learning needs and performance, and maintain a safe, harmonious and inspiring learning environment to guide students in their learning; • provide a wide range of learning activities to boost students' motivation to learn and strengthen their problem-solving ability; and • review and revise teaching strategies to cater for learner diversity and motivate students to sustain continuous improvement.
	1.4 Professional Knowledge and Attitudes	The teacher is able to: • have a thorough grasp of current curriculum emphases, subject contents and pedagogies, and make effective use of such knowledge and skills in teaching; • attach great importance to scientific spirit, and serve as a role model for students on scientific inquiry skills and attitudes for students; • take a leadership role in actively promoting professional exchanges, sharing, reflection and reviews among teachers, and foster the culture of continuous improvement and self-improvement in the teaching profession; • take multiple roles of a teacher, knowledge imparter, information provider, learning facilitator, collaborator, counsellor, assessor and consultant, so as to nurture students as self-directed life-long learners; • give attention to and respect students' uniqueness, and set appropriate expectations for them; and • build 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: • establish a well-defined assessment mechanism and make systematic and effective use of a variety of assessment modes and tools to align with curriculum planning, student learning progress and other student-based or school-based contextual factors, and put due emphasis on formative assessment; • record assessment results systematically and make effective use of these results to enhance learning and teaching, monitor students' progress, cater for learner diversity and review pedagogical practices, with a view to providing feedback on the improvement of pedagogical planning and design; • give timely, useful and positive feedback to students to help them sustain their momentum in learning and identify their strengths and weaknesses, and guide them in building on their strengths and overcoming their weaknesses; and • capitalise on students' self-assessments and peer assessments to promote self-reflection and discussions, thus enabling students to consolidate their learning and make improvement.

2. Student Development Domain

Area	Performance Indicator	Examples of Excellence
Student Development	2.1 Values and Attitudes	The teacher is able to: • arouse students' curiosity and interest about science, so that they will be keen to explore about science, technology, society and environment, and plan and carry out their own scientific investigations to find solutions so as to improve the well-being of mankind; • help students develop scientific thinking skills and guide them in examining scientific theories and concepts through logical reasoning and experimentation; • inspire students to appreciate the wonders and beauty of nature; • nurture students' values and attitudes towards proactive conserving, protecting and sustaining the environment; • help students recognise the social, ethical, economic, environmental and technological implications of science and develop an attitude of responsible citizenship and a commitment to promote personal and community health; • encourage students to remain open-minded, respect others' views, and collaborate and share ideas with others readily; and • develop students' attitude for self-directed learning to build a solid foundation for lifelong learning and whole-person development.

Area	Performance Indicator	Examples of Excellence
	2.2 Knowledge and Skills	The teacher is able to: • enable students to possess the attributes of a scientist, including the abilities to conduct scientific investigations and experiments, carry out research using a wide range of resources, measuring data on evidence, and engage in open discussions and debates, and familiarise them with the language of science for communicating science-related ideas; • foster students' ability to make informed judgments based on scientific evidence and solve problems by applying their scientific knowledge to daily lives; • develop students' abilities to construct knowledge and "learning to learn", and help them realise their potential in science; • enhance students' understanding of the connections between science and other STEM related subjects to prepare them for further studies or future careers in scientific, technological and engineering fields; • enhance students' scientific literacy, equip them with knowledge about the nature of science and help them grasp science process skills, with a view to building a strong foundation of knowledge and skills; • promote e-learning in a bid to cultivate students' interest in learning science, enhance interaction and collaboration among them, facilitate their self-directed learning, and strengthen their information literacy in the process; and • strengthen students' ability to integrate and apply knowledge and skills, and nurture their creativity, collaboration and problem-solving skills, with a view to fostering their innovation and entrepreneurial spirit.

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: ● demonstrate a good understanding and knowledge of current development in science education and education policy and offer ideas and suggestions to address the impacts of related issues; ● produce exemplary teaching materials, actively take part in educational research to try out teaching practices, or make good use of various channels, such as publications, to demonstrate teaching practices with proven effectiveness; ● improve and promote science education by effectively incorporating new ideas and teaching practices that are in line with the prevailing education or learning theories; ● serve as a role model for peers in pursuit of excellence; ● actively participate in internal and external professional training, sharing and exchange activities, and pursue continuing education to upgrade his/her professional knowledge and skills; and ● provide support to the society and the teaching profession, and actively participate 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 peers and other stakeholders to work together to improve the learning and teaching under Science Education KLA; • promote a sharing and collaborative culture in school, with a view to developing the school into a harmonious and professional learning community; • contribute to developing close links with the community and stakeholders and providing supports for student learning and enhancing school development; • provide active support for home-school collaboration; • take a leadership role in promoting, among colleagues, a consensus on and the actualisation of the school's vision and mission and promote continuous school development by sharing exemplary practices and experience, and highlight the characteristics of the school's culture and ethos through a variety of effective means; and • actively promote STEM education, and provide opportunities for teachers of different KLAs to collaborate towards enhanced effectiveness of learning and teaching.

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