

Yan Oi Tong Tin Ka Ping Secondary School

Annual Subject Plan [Science] (2020-2021)

I Aim

The Science (S1-3) curriculum provides science-related learning experiences that develop students' interest in science and to lay a foundation for their studies of various science curricula at the senior secondary level. It also focuses on the development of scientific literacy for living in and contributing towards a scientific and technological world.

The broad aims of the Science (S1-3) curriculum are to enable students to:

- (a) develop curiosity and interest in science;
- (b) acquire fundamental scientific knowledge and skills, and appreciate the relationship between science and other disciplines;
- (c) develop the ability to make scientific investigation and solve problems;
- (d) use the language of science to communicate science-related ideas;
- (e) develop a basic understanding of the nature of science;
- (f) develop the ability to integrate and apply scientific knowledge and skills with other related disciplines;
- (g) recognize 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;
- (h) be prepared for further studies in STEM-related disciplines; and
- (i) become lifelong learners in science for personal development

The Science (S1-3) curriculum was updated and is officially implemented from the school year 2018/19. The implementation of the curriculum is still under active review and fine-tuning. Furthermore, in response to the focus inspection 2019-2020, the S3 curriculum of science subject has been reviewed and modified to align with the framework of junior science curriculum.

II Situational Analysis

1. Strengths

- (a) Students are generally attentive and well-disciplined in classes.
- (b) Junior form students are classified as Band One students who are generally willing and eager to follow instructions during lessons. Teachers need not waste too much time in handling much disciplinary problems.
- (c) Laboratory technician is well experienced and supportive.
- (e) School provides subject panels with a high degree of autonomy. Any changes and reforms within subject panels are usually highly supported.
- (f) Most panel members are well experienced in teaching, and are willing to develop their professional knowledge by engaging themselves in various subject-related seminars organized by professional bodies
- (g) Collaborative lesson periods are well utilized for the exchange of teaching ideas and strategies.
- (h) Lesson observation and collaborative teaching among panel members is common.

2. Weaknesses

- (a) Students are still used to rote learning, and show a strong dependence on teachers. Most of them do not pay much effort in striving for excellence in science.
- (b) Students sometimes cannot apply their scientific knowledge in unfamiliar situations, and are weak in high-order thinking.
- (c) Some students are lack in common knowledge which should have been acquired in the daily life.
- (d) Some Secondary 1 student is weak in using English to learn and study. They cannot communicate effectively in written or oral English.
- (f) Some elite students are lack in motivation to excel for excellence in their academic performance and to explore new knowledge.

3. Opportunities

- (a) Teaching resources are readily available in various channels inside and outside school to facilitate better learning and teaching.
- (b) All teachers are equipped with skills in using English as the medium of instructions in recent years. Useful experience can be shared among the panel members.
- (c) Continuous improvement in the infrastructure and equipments of IT facilitates better learning and teaching with the good use of e-Learning strategies.
- (d) Collaborative teaching in some classes allows the subject-specific topics to be taught by corresponding subject teachers in senior forms.
- (e) School suspension provided the opportunity for development of online teaching resource and learning platforms for students

4. Threats

- (a) The number of Band One S1 students being admitted is unpredictable. Teaching strategies and materials are subject to changes with the ability of admitted S1 students.
- (b) Manpower in the science panel would face a significant change starting from this academic year. Smooth transition of good teaching practices to new members is uncertain.
- (c) Undergraduates from science major are not guaranteed to have strong science background in physics, chemistry and biology. This poses a doubt in recruiting all-rounded new members for teaching junior science in the near future when experienced teachers retire.

III Language Objectives for EMI learning and teaching

In addition, students are expected to acquire the subject knowledge through learning and teaching using English as the medium of instruction (MOI) and language for communication. A number of language objectives have been established to prepare students to acquire and present scientific knowledge and concepts using English.

Students are expected to be able to

- (a) understand scientific texts in textbooks, workbooks and reading materials in English terms and phrases;
- (b) communicate scientific ideas and concepts in English, both in written form and in verbal form; and
- (c) search for information in English and present personal ideas on issues related to scientific context.

Meanwhile, teachers are prepared to assist students to achieve the above objectives by developing a greater awareness of students' language needs and problems. This can be achieved by

- (a) providing opportunities to read scientific texts in English and to use English to communicate in written form;
- (b) using simple classroom language and repeating things in English, and enhancing teacher-student interaction and peer communications in classes using English;
- (c) maintaining English use inside and outside classrooms;
- (d) using suitable assessment indicators to monitor the progress of students' learning using English for devising strategies and measures to cater for students' learning diversity;
- (e) maintaining close collaboration with English teachers for cross-curricular project on LAC; and

VI Objectives of STEM education in the learning and teaching

STEM is an acronym that refers collectively to the academic disciplines of Science, Technology, Engineering and Mathematics. In the school-based junior science curriculum, various measures are suggested to achieve the STEM education by

- (a) aligning the required mathematical skills with school junior form mathematics curriculum wherever possible;
- (b) encouraging students to participate STEM-related activities inside and outside school;
- (c) providing opportunities for teachers and students to immerse themselves in STEM-related activities to catch up with the relevant changes in the modern world.

V Objectives of e-Learning in the learning and teaching

With the continuous improvement in the infrastructure and equipments of IT facilitates better learning and teaching with the good use of e-Learning strategies such as the use of e-classrooms and Google Education Suite in the school e-learning platform, the use of iPads for interactive learning and teaching activities, the use of Youtube channels with a selection of videos on experiments and science content, and the use social media (such as Instagram) for communicating interesting science content with students outside school.

VI Major Concerns

1. To equip students with a solid and broad foundation in science in the junior secondary level to face challenges in the senior forms and the changing world
2. To cater for students' learning diversity
3. To foster teachers' professional development in teaching junior form science
4. To develop and establish a school-based STEM framework for learning

IV Strategies

Major Concern	Strategy	Success Criteria	Method of Evaluation
<p>1. To equip students with a solid and broad foundation in science in the junior secondary level to face challenges in the senior forms and the changing world</p>	<ul style="list-style-type: none"> ◆ Clear learning objectives, especially those are categorized as core science content, are set forth to all students during the course of teaching in different units in order to facilitate students' self-awareness in their learning progress and planning of their learning pace. Learning materials are provided in the carefully-designed unit handbooks for students' learning and revision. ◆ Suitable topics and questions are included in junior form science for them to try out on using various skills in answering questions set on unfamiliar situations. 	<ul style="list-style-type: none"> ◆ Students can fully utilize the materials provided in the unit handbooks and supplementary notes for their revision. More able students can make their own notes based on the teaching materials in order to result in better learning outcome in assessments. ◆ Students can tackle questions set on familiar situations in assessments using their prior knowledge across different topics/units in the school-based curriculum. 	<ul style="list-style-type: none"> ◆ Daily performance ◆ Assessment performance ◆ Teachers' observation ◆ Daily performance ◆ Assessment performance ◆ Teachers' observation

Major Concern	Strategy	Success Criteria	Method of Evaluation
<p>2. To cater for students' learning diversity</p>	<ul style="list-style-type: none"> ◆ More-able students are encouraged to actively participate in various activities and competitions organized by professional bodies. ◆ Average-ability students are of the mostly populated ones in the class and teachers spend most of the time in the lessons to cater for their learning needs. They will be frequently provided with opportunities so that their learning or understanding in classrooms are closely monitored and attended to. ◆ Less-able students are required or advised to work on basic questions in order to keep their standard to the accepted level. Extra work, revision classes or detention classes may be arranged for them whenever necessary. ◆ A comprehensive online learning platform should be established for student's self-learning according to their ability and learning habit. 	<ul style="list-style-type: none"> ◆ More able students display their eagerness in learning science in various activities and competitions. Outstanding performance is expected. They are expected to study science in senior forms. ◆ Average-ability students obtain satisfactory results in formal assessments and are motivated to study science in S3 and senior forms. ◆ Less-able students obtain fair results in formal assessments. ◆ The learning platform is welcomed by the students 	<ul style="list-style-type: none"> ◆ Daily performance ◆ Teachers' observation ◆ Daily performance ◆ Assessment performance ◆ Teachers' observation ◆ Daily performance ◆ Assessment performance ◆ Teachers' observation ◆ Usage rate of the platform

Major Concern	Strategy	Success Criteria	Method of Evaluation
2. To cater for students' learning diversity [cond't]	<ul style="list-style-type: none"> ◆ The newly-launched school-based curriculum, learning and teaching materials and supports are constantly optimized on the half-yearly basis in the panel meetings and CLPs. ◆ Various channels are developed, viz. school science day, visits, workshops, competitions and social media, for students to explore the world of science. 	<ul style="list-style-type: none"> ◆ Students can generally grasp the knowledge taught under this curriculum and display their learning in S3 science subjects and senior form science electives. ◆ Students are immersed into the study of science inside and outside classrooms. They display a sense of enjoyment in science-related activities. 	<ul style="list-style-type: none"> ◆ Daily performance ◆ Assessment performance ◆ Teachers' observation ◆ Daily performance ◆ Teachers' observation
3. To foster teachers' professional development in teaching junior form science	<ul style="list-style-type: none"> ◆ Teachers are encouraged to attend seminars, especially on STEM education, organized by EDB and related agencies. Formal sharing during CLP periods, informal sharing sessions and class observations among teachers are encouraged. ◆ Teachers are encouraged to participate in external organizations and professional bodies for further exposure and resources seeking. 	<ul style="list-style-type: none"> ◆ Teachers are well-informed with the latest development of the curriculum and its learning and teaching activities. Students are benefited from the activities. ◆ Teachers are proactively seeking opportunities to enroll in such duties. 	<ul style="list-style-type: none"> ◆ Students' oral feedback ◆ Teachers' feedback ◆ Teachers' feedback ◆ Panel coordinator's evaluation

VI Assessment Strategies

Continuous Assessment (30 %)	Examination (70 %)
(a) Daily Assessment (10 %)	<u>FORMAT</u> (a) True-or-false (b) Fill in the blanks (c) Multiple-choice Questions (d) Short Questions (e) Long Questions Relevant scientific knowledge and language ability for effective communication will be assessed.
(c) Uniform Tests (20 %)	

◆ Quizzes, uniform tests and examinations

Quizzes, uniform tests and examinations may contain questions set on unfamiliar situations presented in the form of text, diagrams and graphs. In addition, students are expected to apply their scientific knowledge to answer questions set on the information given.

◆ Assignments

It may include pre-lesson preparation tasks, science reading tasks, reflective journals, supplementary worksheets, hands-on learning tasks and so on.

(In case of school suspension, a contingency plan of switching the assessments into online mode is expected.)

◆ Lesson performance

It is carried out on a continuous basis using different methods such as oral questioning, observation of students' performance, participation and attitude towards 'outside-school' competitions and science workshops and so on. In this academic year, students should attend at least one of the many science-related activities daily performance in the second term.

VII Allocation of Manpower in Panel

Overall coordinator	Mr. Lau Pok (LP)
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Secondary 1 coordinator	Mr. Lau Pok (LP)			
Class	1A	1B	1C	1D
Teacher	Mr. Lau Pok (LP)	Mr. Chim Chun Yin (CCY)	Mr. Chim Chun Yin (CCY)	Mr. Chui Hing Wah (CHW)

Secondary 2 coordinator	Mr. Tam Ka Wah			
Class	2A	2B	2C	2D
Teachers	Mr. Tam Ka Wah (TKW) Mr. Chui Hing Wa (CHW)	Mr. Chim Chun Yin (CCY)	Mr. Chim Chun Yin (CCY)	Mr. Tam Ka Wa (TKW)