K TO 12 POINTERS

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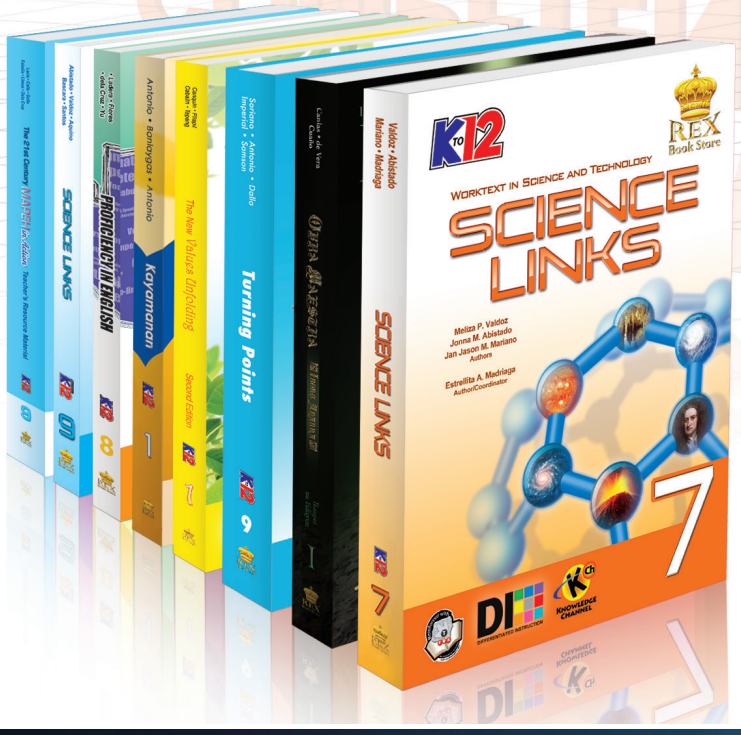
REX Book Store

ALIGNING TO THE NEW COMPETENCIES



About Rex K to 12 Pointers on Curriculum Changes

Dear Partners in Education,

Greetings of peace!

Once again, the Philippine educational landscape is experiencing great changes in the K to 12 curriculum. Hence, we at Rex Book Store present to you the **Rex K to 12 Pointers** – an exclusive annual additional teacher's resource material designed to guide teachers by giving useful suggestions on how to best address specific academic concerns using both Rex teaching and learning materials. Particularly for this issue, the focus is on how teachers can better understand curriculum crosswalks as they impact teaching and learning. Also, this new volume of the Rex K to 12 Pointers for School Year 2014–2015 focuses on how to respond to the K to 12 curriculum version transitions per subject and grade level.

Since the implementation of the K to 12 curriculum in 2011, the DepEd has released several versions of it through its official memoranda, necessitating changes in scope and sequence, and competencies per subject per grade level with each latest release. This regular updating has had more impact on some subjects more than others. For instance, the most notable changes are in the Social Studies subject in which Grade 3 now covers appreciation of one's own region, and Grades 7 to 10 now cover new topics per level. These latest developments in the curriculum pose a challenge to educators, as they must ensure strict compliance in their implementation of the K to 12 program, from the administrative down to the classroom level.

In response, Rex Book Store shares your need to address the curriculum transitions, and we are committed to provide the necessary support to adopters of Rex titles. As your trusted partner, Rex has endeavored to come up with this new edition of the Rex K to 12 Pointers, covering the K to 12 curriculum transitions per subject as they relate to Rex titles. To ensure that Rex teaching and learning materials comply with the latest K to 12 curriculum standards and competencies, the Rex K to 12 Pointers features a curriculum crosswalk. In this crosswalk, our academic specialists have identified the additional lessons and exercises required to maximize the achievement of student learning outcomes per standard in the curriculum. In addition, the output of this crosswalk has been presented through a visual tabulation of what the curriculum transitions are, and how these transitions are addressed by the teaching and learning materials provided by Rex. Thus, this edition of the Rex K to 12 Pointers serves as a guide for you, while the additional lessons may be accessed in the Rex Interactive website via www.rexinteractive.com.

We hope that through the full compliance to the latest K to 12 curriculum that this new resource material offers, you would gain the confidence and peace of mind that you need in becoming effective educators. We are one with you in aspiring toward a successful implementation of the K to 12 basic education program for the benefit of our students. May our concerted efforts be the light to others as well as the mirror that reflects it.

Sincerely,

Rex Book Store

Publisher's Note

Leaders should recognize that one of their prime obligations is to help members of their organizations feel confident and capable as they become motivated (Doll, 2009). Indeed, as principals, subject area coordinators, or classroom teachers, you are leaders in your own schools or classrooms. Part of your responsibilities as leaders is to provide assistance to your members. With the recent changes occurring in the K to 12 curriculum, leaders such as yourselves should support your members as they transition from one curriculum version to another.

The tasks of tracking changes in the curriculum, defining new competencies, and making new lessons to implement the new competencies are grueling for any teacher. But these are necessary tasks to ensure that learners won't be shortchanged by the changes happening, rather, that they reap the fulfillment of the objectives of those changes.

As your trusted partner, Rex Book Store understands the efforts and resources needed to track and implement the changes in the curriculum. Hence, it has endeavored to give you the **Rex Pointers** – a learning supplement that traces the different changes in the curriculum through a curriculum crosswalk, develops new lessons to accomplish the intentions of the competencies, and journeys with the teachers as they execute the new lessons in their classrooms. The curriculum crosswalk found in the Rex Pointers gives the teachers a view of the spiral movement of the curriculum by comparing old standards and competencies to the new ones. It identifies if there are gaps in the curriculum that should be filled to help students attain the intended learning outcomes. The Rex Pointers also contains ready-made lesson plans to address the new learning competencies, saving time for teachers in preparing their instruction. These lesson plans include combined competencies to show the integration of the topics. Finally, the Rex Pointers journeys with the teachers as they execute the new whole curriculum by providing a range of appropriate techniques and strategies.

Rex Book Store hopes that the Rex Pointers will guide teachers toward the direction of becoming true leaders of K to 12 in their schools and their classrooms. With the preparation and assistance that this material offers, teachers are assured that with Rex, "*You are booked for success.*"

Don Timothy Buhain
Chief Operating Officer, Rex Book Store, Inc.

A Primer on Curriculum Crosswalks

The Philippine K to 12 curriculum has undergone various improvements since its implementation last 2011. The improvements can either be in terms of substitution, alteration, variation, restructuring, or value orientation change (Doll, 2001). And as in all changes or improvements, their success depended on how these have been planned, communicated, and accepted. The latest of the improvements were the December 2012 and December 2013 versions released by the DepEd.

In order for schools and teachers to plan and implement these recent improvements in the curriculum, there are processes needed to track them. The simplest but most useful way of tracking them is through a curriculum crosswalk or content map. The purposes of a curriculum crosswalk are (1) to gain information about the curriculum changes; (2) to ensure spiral progression; (3) to provide provision in analyzing gaps in student learning and to fill in these gaps; and (4) to find and integrate natural curriculum connections with the nature of the discipline (Jacobs, 2009).

Defining a Curriculum Crosswalk

The elements in the curriculum that have undergone major changes are the content standards, performance standards, and learning competencies. In order to track these changes and plan actions to comply with them, a curriculum crosswalk is necessary. A curriculum crosswalk refers to a process used to cross-reference or to align the learning outcomes of the courses in a pathway (Bitters and Wigner, 2009).

Why perform a curriculum crosswalk?

A curriculum crosswalk allows for gaps to be found between current standards or learning competencies and expected knowledge and skills required by the discipline. These gaps and deficiencies can then be used to develop new competencies, additional lessons, new courses, and/or new opportunities for students to gain the necessary knowledge and skills.

When should a curriculum crosswalk be done?

Ideally, a curriculum crosswalk should be done before making a course syllabus or the subject's scope and sequence. This allows for changes of curriculum or course development to be incorporated in the instruction or instructional materials being developed.

Steps in Performing a Curriculum Crosswalk

Step 1:

Identify who will be involved in the curriculum review.

- ❑ The proponents determine the procedures used in completing the curriculum review.
- ❑ Documentation and update of the curriculum review are done by the proponents.

Step 2:

Assemble all relevant standards and benchmarks.

- ❑ Content Standards
- ❑ Performance Standards
- ❑ Learning Competencies

Example:

GRADE 1

Domain	Learning Competencies
Listening Comprehension	• Identify connections between text listened to and personal experience DELETED • Make predictions about stories based on the cover or title, pictures, and details in the text DELETED • Use an understanding of characters, incidents and settings to make predictions MOVED TO GRADE 2 3RD QUARTER • Identify story to elements (characters, setting, plot, ending) in the text listened to • Validate ideas made after listening to a story MOVED TO GRADE 2 2ND QUARTER • Activate prior knowledge based on new knowledge formed MOVED TO GRADE 2 1ST QUARTER • Listen carefully to texts read aloud DELETED • Ask and answer simple questions (who, what, where, when, why, and how) about text listened to DELETED • Identify connections between text listened to and personal experience • Ask and respond to questions about informational texts listened to (environment, health, how-to's, etc.) DELETED • Derive meaning from repetitive language structure • Retell and/or reenact events from a story DELETED • Talk about texts identifying major points and key themes DELETED • Participate/engage in a read-along of texts (e.g., poems, repetitive texts) DELETED

Quarter/ Week	LC Listening Comprehension
3rd Quarter 1–10 and 4th Quarter 1–5	EN1OL-IIIa-j- 1.1 1. Listen to short stories/poems and note important details pertaining to a. character b. setting c. events 2. Give the correct sequence of three events NEW 3. Infer the character feelings and traits NEW 4. Identify cause and/or effect of events NEW 5. Identify the speaker in the story or poem NEW 6. Predict possible ending of a story read 7. Relate story events to one's experience 8. Discuss, illustrate, and dramatize specific events NEW 9. Identify the problem and solution NEW 10. Retell a story listened to

December 2012 version **December 2013 version**

Notice that the competencies were compared line by line. This not only helps track what happened to a particular competency, but also gives an idea of the changes that happened. In the example above, some of the competencies were either retained, deleted, moved, revised, or added.

Step 3:

Analyze and crosswalk the standards and competencies.

Note deficiencies and gaps in the curriculum. This part of the curriculum crosswalk can ensure that the learning competencies are in spiral progression. Also, at this vantage, the teacher can see the gaps that the curriculum may have.

Example:

April 2013	Remarks	December 2013
1st Quarter: Living Things and Their Environment		
Content Standards: Demonstrate understanding of photosynthesis and respiration as life energy processes DELETED	In this instance, the content standards were revised to give emphasis on content. The new learning standards discuss both content as well as the process of photosynthesis, whereas the old standards just focused on the process of photosynthesis and respiration. The new content standards necessitates that there is a discussion on the plant part that procures photosynthesis and why this part provides that mechanism.	**Content Standards:** Demonstrate understanding of the structure and function of plant parts and organelles involved in photosynthesis NEW

Step 4:

Align the standards to the curriculum.

- ❑ After a comprehensive synopsis of standards and expectations has been developed, it must be compared to the goals and objectives of the subject area, subject scope and sequence, and the total curriculum.
- ❑ The most effective approach is to look at the curriculum in total and across all subject areas (vertical and horizontal alignments).
- ❑ This step should be able to accomplish integration, eliminate duplication, and optimize use of student time.

Step 5:

Redesign the curriculum to correct the deficiencies.

- ❑ Design new courses or revise current courses.
- ❑ Design teaching enhancements to support the standards.
- ❑ Both content as well as teaching and learning strategies can be modified to address the deficiencies.

Step 6:

Design assessments that verify attainment of standards.

- ❑ Verification of student success is essential if the curriculum is to produce student mastery of required skills.
- ❑ The assessment methods and tools must be developed in direct reference to the standards.

In looking at the crosswalk, the teacher can identify which are the target competencies that need to be developed. Thus, the teacher can now create an assessment to accomplish these targeted competencies. It is easier to view this using the curriculum crosswalk.

One limitation is in identifying the assessment tools to be used. This limitation is addressed by the curriculum map that can be developed when using the crosswalk.

Step 7:

Develop an implementation plan.

- ❑ Include items such as deadlines and timelines, resources, staff/professional development, barriers, and benefits.
- ❑ Professional development must be provided to assist teachers in dealing with the changes.
- ❑ Realistic timelines for implementation must be included.

Step 8:

Evaluate the results.

- ❑ The implementation plan should include collection of suitable data to document the effects of the reform on student performance.
- ❑ The concept of continuous improvement should be adopted with the recognition that reform is an ongoing and never-ending effort.

In this Rex Pointers, steps 1 to 5 have already been provided for the teacher. Thus, teachers no longer have to do the grueling process of identifying changes and developing new lesson plans to apply these changes.

Advantages of Doing a Curriculum Crosswalk

The advantages of doing a curriculum crosswalk are the following:

1. A crosswalk is a simple and clear way to communicate the connections between curriculums. It is useful for explaining the changes in standards and competencies.
2. It is a good review tool. It can point to gaps in the standards and generate ideas/discussion on how to fill in those gaps. It is useful for writing and revising standards.
3. It supports an argument for face validity. The crosswalk can point to the extent to which a competency can cover the concept it purports to measure. This can also show the relevance of the assessment produced.

Limitations of a Crosswalk:

However, a crosswalk should not be used to:

1. Link standards and assessments. It is not good for calibrating standards to test content. It can only describe the content. As a result, teachers would need to conduct a more sophisticated analysis on the test items.
2. Write standards to match test content.
3. Support an argument to establish validity. At most, a crosswalk can show connections (i.e., face validity), but it lacks the analysis necessary for a validity study.

Despite the limitations, the advantages of doing a curriculum crosswalk are still immense. The output can help in developing additional lessons that teachers can use for new and revised competencies.

References:

1. Doll, Robert C. (2009). *Curriculum Improvement Decision Making and Process*. New York, USA: Allyn and Bacon.
2. Jacobs, H. and Johnson, A. (2009). *Curriculum Mapping Planner*. Virginia, USA: ASCD.
3. Ornstein, Behar-Horenstein et al. (2003). *Contemporary Issues in Curriculum, 3rd Edition*. Boston, USA: Pearson.
4. http://cte.dpi.wi.gov/files/cte/pdf/curriccrosswalk.pdf
5. www.adultedcontentstandards.ed.gov/.../Using%20Crosswalks%20for%2...
6. http://www.deped.gov.ph/ (Department of Education 2013 Curriculum Guides)

A Closer Look at the Curriculum Change:

April 2013 vs. December 2013 Science Curriculum Guides

Developing the curriculum is a dynamic process, and this is evident in the two releases of curriculum guides dated April 2013 and December 2013. In the course of plotting the changes and differences in the two versions of science curriculum guide, the following are the common observations:

1. Most of the content standards were retained except for a few that were revised.
2. Performance standards were lessened.
3. Many of the competencies were deleted and revised.

The grade 9 science curriculum was used as an example in this article to show the comparison between April 2013 and December 2013 versions. Below is the legend to better understand the changes in the curriculum.

Legend

- The following tags are used:
  - NEW
  - REVISED
  - DELETED
- The following symbols are used to compare the standards and competencies:

Symbol	Description
⟷	Standards/Competencies are the same/retained.
≠	Standards/Competencies are totally different.
Words/Phrases	Words/Phrases highlighted in RED indicate additional words or phrases.

GRADE 9

FIRST QUARTER – LIVING THINGS AND THEIR ENVIRONMENT

RESPIRATORY AND CIRCULATORY SYSTEMS WORKING WITH THE OTHER ORGAN SYSTEMS

APRIL 2013	DECEMBER 2013
1st Quarter: Living Things and Their Environment	**1st Quarter: Living Things and Their Environment**
Respiratory and Circulatory Systems Working with the Other Organ Systems	**Respiratory and Circulatory Systems Working with the Other Organ Systems**
Content Standards: • Demonstrates understanding of how the different structures of the circulatory and respiratory systems work together to transport oxygen-rich blood and nutrients to the different parts of the body	**Content Standards:** • Demonstrates understanding of how the different structures of the circulatory and respiratory systems work together to transport oxygen-rich blood and nutrients to the different parts of the body
• Demonstrates understanding of the prevention, detection, and treatment of diseases affecting the circulatory and respiratory systems	• Demonstrates understanding of the prevention, detection, and treatment of diseases affecting the circulatory and respiratory systems
Performance Standards: • Conducts an interview with the school nurse or the local health workers on practices that promote proper care for the organs of the circulatory and respiratory systems	**Performance Standards:** • Conducts an information dissemination activity on effective ways of taking care of the respiratory and circulatory systems based on data gathered from the school or local health workers REVISED
Learning Competencies:	**Learning Competencies:**
• Describes the parts and functions of the circulatory system DELETED	
• Explains the mechanism on how the circulatory system transports nutrients, gases, and other molecules to and from the different parts of the body	• Explains how the respiratory and circulatory systems work together to transport nutrients, gases, and other molecules to and from the different parts of the body REVISED
• Explains how harmful substances affect the respiratory and circulatory systems DELETED	
• Explains how lifestyle (e.g., regular exercise, smoking) affects the functioning of the circulatory system	• Infer how one's lifestyle can affect the functioning of respiratory and circulatory systems REVISED
• Makes a chart of diseases affecting the circulatory system and their prevention, detection, and treatment DELETED	

GRADE 9

FIRST QUARTER – LIVING THINGS AND THEIR ENVIRONMENT

HEREDITY: INHERITANCE AND VARIATION

APRIL 2013	DECEMBER 2013
1st Quarter: Living Things and Their Environment	**1st Quarter: Living Things and Their Environment**
Heredity: Inheritance and Variation	**Heredity: Inheritance and Variation**
Content Standards:	**Content Standards:**
• Demonstrates understanding that genetic information is organized in genes on chromosomes	• Demonstrates understanding on how genetic information is organized in genes on chromosomes
• Demonstrates understanding that traits of an organism are transmitted to the offspring through the genes found in chromosomes	• Demonstrates understanding on the fact that traits of organisms are inherited through different patterns REVISED
Performance Standards:	≠ **Performance Standards:** DELETED
• Illustrates how traits of economically important plants and animals are improved through breeding	
Learning Competencies:	**Learning Competencies:**
• Explains how fertilization produces a diploid zygote out of haploid gametes DELETED	• Describes the location of genes in chromosomes
• Describes the location of genes in chromosomes	• Explains the different patterns of non-Mendelian inheritance NEW
• Explains how genes are responsible for specific traits DELETED	

GRADE 9

FIRST QUARTER – LIVING THINGS AND THEIR ENVIRONMENT

BIODIVERSITY AND EVOLUTION

APRIL 2013

1st Quarter: Living Things and Their Environment
Biodiversity and Evolution
Content Standards: • Demonstrates understanding of how changes in the environment may affect species extinction DELETED
• Demonstrates understanding that species become extinct when the environment changes and they fail to adapt
Performance Standards: • Makes a multimedia presentation of a timeline of extinction of representative microorganisms, plants, and animals
Learning Competencies:
• Identifies causes of species extinction DELETED
• Relates species extinction to the failure of populations of organisms to adapt to abrupt changes in the environment

DECEMBER 2013

1st Quarter: Living Things and Their Environment
Biodiversity and Evolution
Content Standards: • Demonstrates understanding of how changes in the environment may affect species extinction REVISED
Performance Standards: • Makes a multimedia presentation of a timeline of extinction of representative microorganisms, plants, and animals
Learning Competencies:
• Relates species extinction to the failure of populations of organisms to adapt to abrupt changes in the environment

GRADE 9

FIRST QUARTER – LIVING THINGS AND THEIR ENVIRONMENT

ECOSYSTEM: FLOW OF ENERGY AND MATTER IN ECOSYSTEMS

APRIL 2013		DECEMBER 2013
1st Quarter: Living Things and Their Environment		1st Quarter: Living Things and Their Environment
ECOSYSTEM: Flow of Energy and Matter in Ecosystems		ECOSYSTEM: Flow of Energy and Matter in Ecosystems
Content Standards: • Demonstrates understanding of photosynthesis and respiration as life energy processes DELETED	≠	**Content Standards:** • Demonstrates understanding of the structure and function of plant parts and organelles involved in photosynthesis NEW • Demonstrates understanding of the structure and function of mitochondrion as the main organelle involved in respiration NEW
Performance Standards: • Shows through a poster how photosynthesis and respiration are related to each other in terms of the feeding relationships and the transfer of energy through trophic levels DELETED • Reports on farming practices that relate knowledge of photosynthesis that may result to increased yield DELETED	≠	**Performance Standards:** • Designs and conducts an investigation to provide evidence that plants can manufacture their own food NEW
Learning Competencies:		**Learning Competencies:**
• Describes how specific cell structures carry out photosynthesis and respiration DELETED • Provides evidence that plants can manufacture their own food DELETED • Differentiates basic features of photosynthesis and respiration • Explains the importance of photosynthesis to other organisms DELETED		• Differentiates basic features and importance of photosynthesis and respiration REVISED

GRADE 9

SECOND QUARTER – MATTER

CHEMICAL BONDING

APRIL 2013	DECEMBER 2013
2nd Quarter: Matter	2nd Quarter: Matter
Chemical Bonding	**Chemical Bonding**
Content Standards:	**Content Standards:**
• Demonstrates understanding of the forces that hold metals together	• Demonstrates understanding of how atoms combine with other atoms by transferring or by sharing electrons
• Demonstrates understanding of how atoms form bonds with other atoms by transfer or sharing electrons	• Demonstrates understanding of forces that hold metals together
Performance Standards:	**Performance Standards:** DELETED
• Conducts a survey of organic and inorganic compounds found as natural resources in the Philippines	**Learning Competencies:**
• Presents data in poster, chart or multimedia the uses of compounds based on their properties	• Explains the formation of ionic and covalent bonds REVISED
Learning Competencies:	• Recognizes different types of compounds (ionic or covalent) based on their properties such as melting point, hardness, polarity, and electrical and thermal conductivity
• Explains properties of metals in terms of their structure	• Explains properties of metals in terms of their structure
• Recognizes different types of compounds (ionic or covalent) based on their properties such as melting point, hardness, polarity, and electrical and thermal conductivity	• Explains how ions are formed
• Explains how ions are formed	
• Recognizes the importance of ions when humans obtain nutrients from food DELETED	
• Explains the formation of ionic and covalent bonds	
• Explains chemical changes in terms of the breaking of bonds and the rearrangement of atoms to form new substances DELETED	

GRADE 9

SECOND QUARTER – MATTER

THE VARIETY OF CARBON COMPOUNDS

APRIL 2013		DECEMBER 2013
2nd Quarter: Matter		2nd Quarter: Matter
The Variety of Carbon Compounds		**The Variety of Carbon Compounds**
Content Standards:		**Content Standards:**
• Demonstrates understanding of the type of bond that carbon forms resulting to the diversity of carbon compounds	↔	• Demonstrates understanding of the type of bonds that carbon forms that result in the diversity of carbon compounds
Performance Standards:	≠	**Performance Standards:** DELETED
• Creates a database of the organic compounds surveyed, indicating their structure, properties, and uses		
Learning Competencies:		**Learning Competencies:**
• Explains how the structure of carbon atom affects the type of bonds it forms	↔	• Explains how the structure of the carbon atom affects the type of bonds it forms
• Recognizes the general classes of organic compounds and their uses	↔	• Recognizes the general classes and uses of organic compounds

GRADE 9

SECOND QUARTER – MATTER

MOLE CONCEPT

APRIL 2013	DECEMBER 2013
2nd Quarter: Matter	2nd Quarter: Matter
Mole Concept	**Mole Concept**
Content Standards: • Demonstrates understanding that matter consists of an extremely large number of very small particles which can be quantitatively measured by the unit, mole	**Content Standards:** • Demonstrates understanding of the unit, mole, that quantitatively measures the number of very small particles of matter REVISED
Performance Standards: • Designs an educational game involving mole concepts DELETED	**Performance Standards:** • Analyzes the percentage composition of different brands of two food products and decide on the products' appropriate percentage composition NEW
Learning Competencies:	**Learning Competencies:**
• Uses the mole concept to express mass of substances	• Uses the mole concept to express mass of substances
• Determines the percentage composition of a compound given its chemical formula and vice versa	• Determines the percentage composition of a compound given its chemical formula and vice versa

GRADE 9

THIRD QUARTER – EARTH AND SPACE

VOLCANOES AND THE INTERIOR OF THE EARTH

APRIL 2013		DECEMBER 2013
3rd Quarter: Earth and Space		3rd Quarter: Earth and Space
Volcanoes and the Interior of the Earth		Volcanoes
Content Standards: • Demonstrates understanding of the interior of the Earth using information from volcanoes DELETED	≠	**Content Standards:** • Demonstrates understanding of: volcanoes found in the Philippines NEW
Performance Standards: • Participates in making informed decisions based on identified permanent danger zones around active volcanoes • Shows emergency preparedness before, during and after a volcanic eruption including following advisories regarding alert levels and calls for evacuation given by responsible government agencies	≠	**Performance Standards:** DELETED
Learning Competencies:		**Learning Competencies:**
• Identifies the volcanoes in the community or region DELETED		• Describes the different types of volcanoes
• Differentiates between active and inactive volcanoes		• Differentiates between active and inactive volcanoes
• Describes the different types of volcanoes		• Explains what happens when volcanoes erupt REVISED
• Using models or illustrations, explains what happens when volcanoes erupt		• Illustrates how energy from volcanoes may be tapped for human use REVISED
• Using diagrams, illustrates how energy from volcanoes may be tapped for human use		
• Explains how volcanoes provide information about the interior of the Earth DELETED		

GRADE 9

THIRD QUARTER – EARTH AND SPACE

CLIMATE

APRIL 2013	DECEMBER 2013
3rd Quarter: Earth and Space	3rd Quarter: Earth and Space
Climate	**Climate**
Content Standards:	**Content Standards:**
• Demonstrates understanding of the factors that affect climate, the effects of changing climate, and how to adapt to them	Demonstrates understanding of the factors that affect climate, and the effects of changing climate and how to adapt accordingly REVISED
Performance Standards:	**Performance Standards:**
• Participates in activities that reduce risks and lessen effects of climate change	Participates in activities that reduce risks and lessen effects of climate change
Learning Competencies:	**Learning Competencies:**
• Explains how different factors affect the climate of an area	Explains how different factors affect the climate of an area
• Describes certain climatic phenomena that occur on a global level	Describes certain climatic phenomena that occur on a global level

GRADE 9

THIRD QUARTER – EARTH AND SPACE

CONSTELLATIONS

APRIL 2013	DECEMBER 2013
3rd Quarter: Earth and Space	**3rd Quarter: Earth and Space**
Constellations	**Constellations**
Content Standards:	**Content Standards:**
• Demonstrates understanding of the relationship between the visible constellations in the sky and Earth's position along its orbit	• Demonstrates understanding of the relationship between the visible constellations in the sky and Earth's position along its orbit
Performance Standards:	**Performance Standards:**
• Discusses whether or not beliefs and practices about constellations and astrology have scientific basis	• Discusses whether or not popular beliefs and practices with regard to constellations and astrology have scientific basis REVISED
Learning Competencies:	**Learning Competencies:**
• Infers the characteristics of stars based on the characteristics of the Sun	• Infers the characteristics of stars based on the characteristics of the Sun
• Infers that the arrangement of stars in a group (constellation) does not change	• Infers that the arrangement of stars in a group (constellation) does not change
• Observes that the position of a constellation changes in the course of a night	• Observes that the position of a constellation changes in the course of a night
• Using models, shows which constellations may be observed at different times of the year	• Shows which constellations may be observed at different times of the year using models

GRADE 9

FOURTH QUARTER – FORCE, MOTION, AND ENERGY

MOTION IN TWO DIMENSIONS

APRIL 2013	DECEMBER 2013
4th Quarter: Force, Motion, and Energy	**4th Quarter: Force, Motion, and Energy**
Motion in Two Dimensions	**Motion in Two Dimensions**
Content Standards:	**Content Standards:**
• Demonstrates understanding of projectile motion, impulse and momentum, and conservation of linear momentum	• Demonstrates understanding of projectile motion, impulse and momentum, and conservation of linear momentum
Performance Standards:	**Performance Standards:**
• Advocates road safety through various media focusing on vehicular collisions DELETED	
• Proposes ways to enhance sports related to projectile motion	• Proposes ways to enhance sports related to projectile motion
Learning Competencies:	**Learning Competencies:**
• Describes the horizontal and vertical motions of a projectile	• Describes the horizontal and vertical motions of a projectile
• Investigates the relationship between the angle of release and the height and range of the projectile	• Investigates the relationship between the angle of release and the height and range of the projectile
• Relates impulse and momentum to collisions of objects (e.g., vehicular collision)	• Relates impulse and momentum to collision of objects (e.g., vehicular collision)
• Infers that the total momentum before and after collision is equal	• Infers that the total momentum before and after collision is equal
• Examines effects and predicts causes of collision-related damages/ injuries	• Examines effects and predict causes of collision-related damages/ injuries

GRADE 9

FOURTH QUARTER – FORCE, MOTION, AND ENERGY

WORK, POWER, AND ENERGY

APRIL 2013	DECEMBER 2013
4th Quarter: Force, Motion, and Energy	4th Quarter: Force, Motion, and Energy
Work, Power, and Energy	Work, Power, and Energy
Content Standards:	**Content Standards:**
• Demonstrates understanding of conservation of mechanical energy	• Demonstrates understanding of conservation of mechanical energy
Performance Standards:	**Performance Standards:**
• Practices safety in amusement rides DELETED	• Creates a device that shows conservation of mechanical energy NEW
Learning Competencies:	**Learning Competencies:**
• Explains energy transformation in various activities/events (e.g., waterfalls, archery, amusement rides)	• Explains energy transformation in various activities/events (e.g., waterfalls, archery, amusement rides)
• Performs activities to demonstrate conservation of mechanical energy	• Performs activities to demonstrate conservation of mechanical energy
• Infers that the total mechanical energy remains the same during any process	• Infers that the total mechanical energy remains the same during any process

≠

GRADE 9

FOURTH QUARTER – FORCE, MOTION, AND ENERGY

HEAT, WORK, AND EFFICIENCY

APRIL 2013	DECEMBER 2013
4th Quarter: Force, Motion, and Energy	**4th Quarter: Force, Motion, and Energy**
Heat, Work, and Efficiency	**Heat, Work, and Efficiency**
Content Standards:	**Content Standards:**
• Demonstrates understanding of the relationship among heat, work, and efficiency	• Demonstrates understanding of the relationship among heat, work, and efficiency
Performance Standards:	**Performance Standards:**
• Practices wise choice of electrical appliances based on their energy efficiency DELETED	• Analyzes how power plants generate and transmit electrical energy NEW
Learning Competencies:	**Learning Competencies:**
• Constructs a model to demonstrate that heat can do work	• Constructs a model to demonstrate that heat can do work
• Infers that heat transfer can be used to do work and that work involves the release of heat	• Infers that heat transfer can be used to do work, and that work involves the release of heat
• Explains why machines are never 100% efficient	• Explains why machines are never 100 percent efficient
• Explains how heat transfer and energy transformation make heat engines like geothermal plants work	• Explains how heat transfer and energy transformation make heat engines like geothermal plants work

GRADE 9

FOURTH QUARTER – FORCE, MOTION, AND ENERGY

ELECTRICITY AND MAGNETISM

APRIL 2013	DECEMBER 2013
4th Quarter: Force, Motion, and Energy	**4th Quarter: Force, Motion, and Energy**
Electricity and Magnetism	**Electricity and Magnetism**
Content Standards: • Demonstrates understanding of power generation, transmission, and distribution	**Content Standards:** • Demonstrates understanding of generation, transmission, and distribution of electrical energy from power plants (hydroelectric, geothermal, wind, nuclear) to home REVISED
Performance Standards: • Communicates how electricity from power plants reaches one's home	≠ **Performance Standards:** DELETED
Learning Competencies:	**Learning Competencies:**
• Explains generation and transmission of electricity through power stations	• Explains how electrical energy is generated, transmitted, and distributed
• Explains the importance of a national grid system DELETED	
• Enumerates various ways of generating electricity in the Philippines and states the transformation of energy for each (e.g., hydroelectric, geothermal or wind power plant) DELETED	
• Describes energy loss in transmission cables and explains how these can be prevented DELETED	

SUMMARY OF CHANGES

First Quarter: Living Things and Their Environment

There are four topics in this quarter, namely:

A. Respiratory and Circulatory Systems Working with the Other Organ Systems
B. Heredity: Inheritance and Variation
C. Biodiversity and Evolution
D. ECOSYSTEM: Flow of Energy and Matter in Ecosystems

Among these four topics, Respiratory System and Heredity remained their content standards. Biodiversity and Ecosystem, on the other hand, had their content standards changed from the April version to the December release. Also, most of the learning competencies found in the April version were deleted resulting to a reduced number of competencies in the December version.

Second Quarter: Matter

There are three topics in this quarter, namely:

A. Chemical Bonding
B. The Variety of Carbon Compounds
C. Mole Concept

The content standards in the three topics were retained. While the performance standards of Chemical Bonding and Variety of Carbon compounds were deleted, Mole Concept has a new performance standards. Most of the learning competencies were retained in this quarter.

Third Quarter: Earth and Space

There are three topics in this quarter, namely:

A. Volcanoes
B. Climate
C. Constellations

The content and performance standards in the Volcanoes and the Interior of the Earth were totally changed from April to December version. Their learning competencies, however, were not changed. The rest of the topics were not changed.

Fourth Quarter: Force, Motion, and Energy

There are four topics in this quarter, namely:

A. Motion in Two Dimensions
B. Work, Power, and Energy
C. Heat, Work, and Efficiency
D. Electricity and Magnetism

Motion in Two Dimensions was not changed except for its performance standards being deleted. With the three other topics, their performance standards were deleted and replaced with a new one. Learning competencies were mostly retained in this quarter except for a few in electricity and magnetism that were deleted.

SAMPLE OF SUPPLEMENTAL LESSON PLAN

Second Quarter: Force, Motion, and Energy

Lesson 1
Lesson Focus: Electromagnetic Spectrum
No. of Days: 3

Introduction:

Key Understanding: As wavelength increases, energy of the electromagnetic wave decreases.

Activating Prior Knowledge

1. Students will get a whole sheet of paper to do the KWLL. They will fill out the first two columns, K and W. Collect the papers to see their answers. Return these after the lessons to complete the remaining columns.

   Group students by fives or sixes. Provide each group a copy of the electromagnetic spectrum (ES). The print must be clear so students can identify where each radiation begins and ends. If you have a big chart or poster of the ES, keep it posted on the wall or on the board for students to observe.
2. Ask students to answer the following in a recitation or in a short quiz: (Summative)
   - What is energy?
   - Observe the electromagnetic spectrum. Which of these forms of electromagnetic waves are familiar to you? (They will choose from microwave, radio wave, infrared...)
   - Where have you used them? (OR, when do you use them?)

Body:

Key Question: Why is it important to know the properties of the different electromagnetic waves?

Presenting the Key Question

A. Illustrate on the board a wave. Increase students' vocabulary: crest, trough, wavelength, amplitude, frequency.
   1. Call on students to label the wave with crest, trough, wavelength, and amplitude. How will they illustrate frequency?
   2. Relate frequency with wavelength. Ask students, "What happens to frequency when wavelength increases? When it decreases? Why?"
   3. Students will identify the different electromagnetic waves (EW) as shown on the ES. Ask them to compare the wavelengths of these EW.

B. Using the groups formed earlier, assign an EW to each one. They will research (using reference materials or the Internet) on the properties of the EW assigned to them.
   1. Describe the properties of the EW.
   2. Describe the energy that it gives off. Find out about the effects of prolonged exposure to the EW.
   3. What materials give off such EW?

C. The groups will present their research to the class through posters (size: 1 cartolina) and a discussion.

D. Students will complete column 3 of the KWLL.

Conclusion:

Students will...

1. Review what they wrote in columns 1–3 of the KWLL.
   * What did they accomplish? What were not accomplished?
   * Complete column 4 with what they still want to learn about electromagnetic radiation.
2. Write in their journal the importance of knowing the properties of the different EW.
3. Take a written test on electromagnetic radiation.
4. Draw two waves showing different wavelengths and frequencies. Describe how each wave can represent water waves.