Science Textbook Correlation Matrices
Life Science Standards of Learning
Publisher: Glencoe/McGraw-Hill Text/Instructional Material Title: Glencoe Life Science ©2002

Science Standard	**Correlation By Page Numbers** Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
LS.1 The student will plan and conduct investigations in which	
a) data are organized into tables showing repeated trials and means;	133, 609
b) variables are defined;	9, 85, 295–296, 422–423, 450–451, 536–537, 564–565, 609, 618–619, 710–711, 726, 733
c) metric units (SI - International System of Units) are used;	27, 37, 44, 201, 249, 294–295, 315, 408, 493, 507, 615, 724
d) models are constructed to illustrate and explain phenomena;	40, 111, 189, 153, 187, 232–233, 290, 397, 431, 434, 476–477, 534, 590–591, 627, 647, 657, 662, 756, 777, 800–801
e) sources of experimental error are identified;	9, 10, 85, 295–296, 422–423, 450–451, 507–508, 536–537, 564–565, 609, 618–619, 710–711, 726, 733
f) dependent variables, independent variables, and constants are identified;	9, 85, 295–296, 422–423, 450–451, 536–537, 564–565, 609, 618–619, 710–711, 726, 733
g) variables are controlled to test hypotheses and trials are repeated;	9, 85, 113, 295–296, 422–423, 450–451, 536–537, 564–565, 609, 618–619, 710–711, 726, 733
h) continuous line graphs are constructed, interpreted, and used to make predictions;	710–711, 795
i) interpretations from the same set of data are evaluated and defended; and	78, 140, 295, 536–537561, 589, 609, 632, 710–711, 727
j) an understanding of the nature of science is developed and reinforced.	This objective is addressed throughout. See for example: 58–59, 102, 133, 140, 247, 262, 277, 293, 294–295, 311, 387, 474, 589, 609, 632, 661, 671, 695, 710–711, 759

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LS.2 The student will investigate and understand that all living things are composed of cells. Key concepts include	
a) cell structure and organelles (cell membrane, cell wall, cytoplasm, vacuole, mitochondrion, endoplasmic reticulum, nucleus and chloroplast);	38, 39, 40, 41, 42, 43, 44
b) similarities and differences between plant and animal cells;	39, 41, 45, 46
c) development of cell theory; and	51
d) cell division (mitosis and meiosis).	96–97, 98–100, 101, 102, 103, 104, 105, 106–107, 109, 277, 639

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LS.3 The student will investigate and understand that living things show patterns of cellular organization. Key concepts include	
a) cells, tissues, organs, and systems; and	14, 15–18, 39–40, 41–44, 45, 51, 75–78, 79, 96–97, 309–310, 490–495, 496–501, 529–535, 546–552, 556–561, 562–563, 572–582, 583–588, 600–608, 610–617, 628–632, 633–637, 639–647, 650–651, 658–670
b) life functions and processes of cells, tissues, organs, and systems (respiration, removal of wastes, growth, reproduction, digestion, and cellular transport).	14, 15–18, 39–40, 41–44, 45, 51, 75–78, 79, 96–97, 309–310, 490–495, 496–501, 529–535, 546–552, 556–561, 562–563, 572–582, 583–588, 600–608, 610–617, 628–632, 633–637, 639–647, 650–651, 658–670

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LS.4 The student will investigate and understand that the basic needs of organisms must be met in order to carry out life processes. Key concepts include	
a) plant needs (light and energy sources, water, gases, nutrients);	15, 18, 77, 82, 85, 86–87, 242–243, 244–245, 248–253, 254–262, 304, 305, 309–310, 314, 704, 721–726
b) animal needs (food, water, gases, shelter, space); and	15, 17, 18, 81–85, 334, 335–337, 695, 696, 707, 735–737
c) factors that influence life processes.	15, 17, 18, 77, 81–85, 86–87, 242–243, 244–245, 248–253, 254–262, 304, 305, 309–310, 314, 334, 335–337, 695, 696, 704, 707, 721–726, 735–737

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LS.5 The student will investigate and understand how organisms can be classified. Key concepts include	
a) distinguishing characteristics among kingdoms of organisms;	4, 5, 22, 23, 24–26, 27, 212, 213, 247, 338–339, 860–863
b) distinguishing characteristics of major animal and plant phyla; and	23, 248–249, 250–253, 254–257, 258, 259–260, 340–342, 343–345, 346, 348–350, 351–353, 364, 369, 384, 399–401, 403–405, 411–412, 416–417, 432–439, 440–443, 860–863
c) the characteristics of the species.	23, 249, 263, 365–367, 369–372, 375–377, 378, 379, 381, 385–386, 406–409, 413, 414, 417–419, 444–447, 748, 749, 860–863

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LS.6 The student will investigate and understand the basic physical and chemical processes of photosynthesis and its importance to plant and animal life. Key concepts include	
a) energy transfer between sunlight and chlorophyll;	15, 82–83, 85, 86–87, 243, 304–306, 307–309, 704, 722, 734
b) transformation of water and carbon dioxide into sugar and oxygen; and	83, 85, 86–87, 304, 305, 307, 308, 309, 310, 311, 721, 734
c) photosynthesis as the foundation of virtually all food webs.	735, 736, 737

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LS.7 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment. Key concepts include	
a) the carbon, water, and nitrogen cycles;	728–729, 730–731, 732, 733
b) interactions resulting in a flow of energy and matter throughout the system;	15, 81–85, 310, 335, 518, 704–705, 720–726, 728–733, 734–737
c) complex relationships within terrestrial, freshwater, and marine ecosystems; and	693, 694, 695, 696, 697, 698, 699, 700–703, 704–705, 706, 707–708, 719–726, 748–751, 752–754, 760, 761–763, 764–767
d) energy flow in food webs and energy pyramids.	717, 734–735, 736–737

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LS.8 The student will investigate and understand that interactions exist among members of a population. Key concepts include	
a) competition, cooperation, social hierarchy, territorial imperative; and	156, 466, 467, 468–470, 708
b) influence of behavior on a population.	156, 462–465, 466–472, 473–474, 694, 708

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LS.9 The student will investigate and understand interactions among populations in a biological community. Key concepts include	
a) the relationship among producers, consumers, and decomposers in food webs;	704, 705, 708, 717, 735, 736
b) the relationship of predators and prey;	335, 336, 337, 708
c) competition and cooperation;	156, 706, 708
d) symbiotic relationships; and	706, 707, 708
e) niches.	707, 708

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LS.10 The student will investigate and understand how organisms adapt to biotic and abiotic factors in an ecosystem. Key concepts include	
a) differences between ecosystems and biomes;	The opportunity to address this objective is available. See the following: 692, 693, 752–759, 761–764, 765–767
b) characteristics of land, marine, and freshwater ecosystems; and	752–759, 761–764, 765–767
c) adaptations that enable organisms to survive within a specific ecosystem.	158–159, 335–337, 706, 708, 748–751, 752–759, 761–764, 765–767

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LS.11 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time (daily, seasonal, and long term). Key concepts include	
a) phototropism, hibernation, and dormancy;	314, 411, 473, 748–751
b) factors that increase or decrease population size; and	696, 697, 698, 699, 700, 701, 702, 710–711
c) eutrophication, climate change, and catastrophic disturbances.	740–741, 746, 748–751, 786–794, 795

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LS.12 The student will investigate and understand the relationships between ecosystem dynamics and human activity. Key concepts include	
a) food production and harvest;	778, 793
b) change in habitat size, quality, and structure;	448, 696, 697, 698, 699, 700, 701
c) change in species competition;	696, 740–741, 746, 786–794, 795, 796
d) population disturbances and factors that threaten and enhance species survival; and	448, 696, 740–741, 746, 786–794, 795, 796
e) environmental issues (water supply, air quality, energy production, and waste management).	778–779, 780, 781–784, 786, 787, 789, 790, 791–792, 793, 794, 795

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LS.13 The student will investigate and understand that organisms reproduce and transmit genetic information to new generations. Key concepts include	
a) the role of DNA;	40, 71, 110–112, 113–115, 141–143, 169
b) the function of genes and chromosomes;	40, 104, 105, 106–107, 108, 109, 112–114, 169
c) genotypes and phenotypes;	130, 131, 132, 134, 135, 139
d) factors affecting the expression of traits;	126–127, 128, 129, 130, 132, 133, 134–135, 136, 137, 138, 139
e) characteristics that can and cannot be inherited;	The opportunity to address this objective is available. See the following: 126–127, 136
f) genetic engineering and its applications; and	141–143, 296–297
g) historical contributions and significance of discoveries related to genetics.	127–128, 129, 130, 132

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LS.14 The student will investigate and understand that organisms change over time. Key concepts include	
a) the relationships of mutation, adaptation, natural selection, and extinction;	114–115, 116–117, 137, 157, 158–159, 162, 335–337, 367, 420, 421, 448
b) evidence of evolution of different species in the fossil record; and	163, 164, 165, 166, 167, 168, 169, 373, 382, 401, 410, 415, 421, 439
c) how environmental influences, as well as genetic variation, can lead to diversity of organisms.	114–115, 116–117, 136, 137, 158–159, 335–337

Science Textbook Adoption Additional Criteria
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Additional Criteria	**Evidence** Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
1. Safe use of materials and equipment is encouraged.	Emphasis on safety begins inside the front cover with a chart of safety symbols and their meanings. All Explore Activities, MiniLABs, and Activities contain safety symbols and safety precautions as needed. . In the teacher's edition, laboratory safety and chemical storage and disposal are discussed on pages 34T-35T.
2. Materials emphasize the use of effective instructional practices and learning theories. • Students are guided through different approaches such as the learning cycle. • Students are provided the opportunity to conduct scientific inquiry appropriate for their age, grade, and maturity. • Concepts are introduced through concrete experiences. • Students are required to use manipulative materials during investigations and activities. • Multiple opportunities are provided for students to apply concepts. • Learning activities offer opportunities for students to revise their prior knowledge and create new knowledge. • Students are encouraged to pose questions and to identify problems, as well as propose multiple solutions and design and conduct tests of inference. • Students collect and interpret data through a variety of technologies and draw conclusions based on that data.	The teacher wraparound edition is organized around a three-step learning cycle—1. Motivate, 2. Teach, 3. Assess. Each chapter begins with a Foldables-Reading and Study Skills to help students organize information. All chapters and activities are reviewed by teachers for grade-level appropriateness. The Explore Activity at the beginning of each chapter introduces the lesson and ensuing content. MiniLABs and Activities introduce or reinforce content using a wide variety of materials and equipment. Students apply concepts in MiniLABs, Activities, Problem-Solving Activities, Math Skills Activities, and in the Think Critically questions in Section Assessments and Chapter Assessments. Design Your Own Experiment Activities (such as pages 174-175) provide opportunities to use prior knowledge and newly acquired information to pose questions, form hypotheses, and design investigations. Data collection and analysis allow students to draw conclusions, create new knowledge, and revise prior knowledge.

Additional Criteria	**Evidence** Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
3. Materials present content in an accurate, unbiased manner, and are based on sound science. • Materials do not contain content errors (omissions of current content, out-of-date content, overgeneralizations, etc.). • Materials do not contain production errors (misspelled words, word omissions, incorrect answers). • Diverse groups (racial, ethnic, cultural, linguistic), males and females, people with disabilities, and people of all ages are represented appropriately. • The materials are free of non-scientific explanation.	All Glencoe student and teacher editions are written and edited by content experts. The chapters are verified by fact-checkers. In addition, the books are reviewed and critiqued by teachers of the appropriate grade level, safety consultants, post-secondary level content consultants, and other specialists. All materials are checked for production errors by experienced proofers and production editors. Art and photos reflect diversity according to percentages based on US Census data. Inclusion Strategies in the teacher edition provide alternatives for meeting individual needs. Cultural Diversity features within the teacher edition broaden student awareness. Explanations are based in scientific fact.

Additional Criteria	**Evidence** Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
4. Materials promote student assessment as an integral part of the instructional process. • Assessment suggestions and scoring criteria for student performances on work such as lab practicals or tasks, concept maps, research projects, observation checklists, etc., are provided. • Assessment items include multiple-choice, short answer, essay and open-ended questions with charts, graphs, and diagrams imbedded within the items. • Options include techniques for assessing students' prior knowledge. • Assessment items reflect the rigor and the intent of the standards. For example, they require students to use higher order thinking skills to apply, analyze, synthesize, evaluate, and make judgments or recommendations.	The student and teacher edition contain numerous opportunities for assessment. Student edition: Reading Checks through out, Science Journal, MiniLAB analysis, Conclude and Apply in Activities, Section Assessment, Skill Builder Activities, caption questions, Chapter Study Guide and Assessment, and Test Practice. Teacher edition: √ Assessment (authentic, portfolio, and performance), Discussion, Check for Understanding, and Mini-Quiz. The teacher's edition contains teaching strategies, sample data, and answers to aid teachers in scoring student performance. Chapter Study Guides and Assessments contain a variety of assessment items. For examples see pages 32-35, 60-63, and 392-395. The teacher edition provides opportunities to assess student's' prior knowledge in Tie to Prior Knowledge and Identifying Misconceptions. Correlations to the National Science Standards, NCTM Standards, and Benchmarks are presented on teacher edition pages 4T-8T. Students develop and apply higher order thinking skills throughout. For examples, see pages 11, 18, 131, and 140.

Additional Criteria	**Evidence** Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
5. Materials are presented in an organized, logical manner and are appropriate for the age, grade, and maturity of the students. • Materials are organized appropriately within and among units of study. • Format design includes titles, subheadings, and appropriate cross-referencing for ease of use. • Writing style, length of sentences, and vocabulary are appropriate. • Graphics and illustrations are appropriate. • Level of abstraction is appropriate, and real life examples, including careers are provided. • Sufficient applications are provided to promote depth of understanding.	Student edition is reviewed by teachers for grade-level appropriateness. Four major themes of energy, systems and interactions, scale and structure, and stability and change are developed in the student edition and discussed throughout the teacher edition. Each chapter is divided into two to four sections. Each section is organized by titles and subheads that help students outline the main ideas. All chapters were checked for grade-level readability by Swinburne Readability Laboratory. Graphics and illustrations provide age-appropriate information that helps students visualize the abstract (pages 106-109, 306, 316, and 345), connect their everyday lives to science (pages 18, 75-76, 126, and 170) and careers (pages 89, 323, 644, and 674), and demonstrate applications (pages 55, 134-135, 196, and 200). Note National Geographic Visualizing (pages 79, 323, and 391).