



ADVENTIST EDUCATION
Journey to Excellence

The Critical Concepts **PROFICIENCY SCALES**

A *proficiency scale* is a defined learning progression for a specific topic of study that shows teachers and students what proficiency looks like. Content is articulated in elements (statements of knowledge or skill) at the target (3.0), simpler (2.0), and more complex (4.0) levels, with elements at the target level describing what students should know or be able to do to demonstrate mastery.

GUARANTEED AND VIABLE CURRICULUM

The target (3.0) content establishes a *guaranteed and viable* curriculum across schools in the NAD. This provides a set of essential content in each grade level or course that all students will learn (guaranteed) and that can be taught within the amount of time provided (viable). Having a guaranteed and viable curriculum makes curriculum manageable and eliminates variance between classrooms across the NAD.

NAD CUSTOMIZATION OF THE SCALES

The 2.0 and 4.0 levels of the Marzano Critical Concepts proficiency scales were designed as a menu of content that could be customized to fit the unique needs and circumstances of schools and districts. A team of educators from across the NAD worked together to customize the Critical Concepts proficiency scales for use in our schools. Content area teams selected the most important vocabulary terms and 2.0 content that would

be directly taught and assessed. These consist of approximately three to five elements at the simpler (2.0) level for each target (3.0) element, along with the necessary vocabulary terms not already taught at a lower grade level. On some of the scales, the 4.0 element was modified to better meet the needs of learners or more clearly articulate an extension of the level 3.0 target.

CONFERENCE/SCHOOL CUSTOMIZATION OF THE SCALES

For schools or conferences that wish to engage in the work of customizing the scales, a full version of each scale is available. The process of customization can be beneficial to teachers as they collaborate to determine the most important content to teach and how to best meet the needs of learners. Through the customization process teachers will gain a clear and common understanding of the knowledge and skills at each level of the scale.

The final version of a proficiency scale for a school or conference should be agreed to by all educators teaching the content contained within it, and all educators teaching that content at a specific grade level should use the same version of the proficiency scale. It is important to remember that the target (3.0) content establishes our NAD guaranteed and viable curriculum; the content at this level must remain unchanged. For further guidance on the customization process, please see the document titled *Customizing the Marzano Critical Concepts Proficiency Scales*.

STUDENT-FRIENDLY VERSION

A student-friendly version of each proficiency scale has been developed to assist teachers in providing feedback to students about their levels on the proficiency scale throughout a unit of instruction. Students can use the student-friendly scale to track their own progress and set goals for their learning.

FAITH AND LEARNING

The proficiency scales are aligned with the NAD education standards and are grounded in our Adventist worldview. There are faith and learning content components in the 2.0 foundational elements and some scales that are dedicated faith and learning scales.

Seventh-day Adventist educators have the privilege and responsibility of developing and sharing learning opportunities that will encourage students in a biblical and Seventh-day Adventist worldview and deepen their relationship with Jesus and our Heavenly Father. It is the intention that teachers will integrate faith and learning as they utilize the proficiency scales to plan units of instruction and daily lessons and select materials and activities to engage students.

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Proficiency Scale Example



Seventh-day Adventist Church
NORTH AMERICAN DIVISION



Life Sciences Biology I, Biology II, A & P Cellular Respiration and Photosynthesis

GRADE	NAD STANDARD/NGSS
HS	A&P.4.5 Describe the major chemical and cellular processes necessary for maintaining life (cellular respiration, protein synthesis, mitosis, meiosis). HS-LS1-1, 1-4, 1-6, 1-7, 3-1, 3-2, 3-3 BIO1.4.2 Demonstrate understanding of cellular structures and processes. HS-LS1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7 BIO1.4.5 Comprehend the interdependence between organisms and their environment. HS-LS1-5, 1-7, 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 4-2 BIO1.6.1 Compare and contrast cell diagrams and processes. HS-LS1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7
SCORE	THE STUDENT:
4.0	The student will: • Investigate the differing features of cellular respiration and photosynthesis to identify similarities and differences between the processes (for example, create a comparison matrix that compares cellular respiration and photosynthesis in terms of end products, requirements, processes, functions, locations, and electron sources).
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	The student will: CRP1—Explain photosynthesis as a chemical process (for example, diagram the process of light-dependent photosynthesis and the Calvin cycle, showing how various products from one step start another, and write proper chemical equations to represent the diagram). CRP2—Explain cellular respiration as a chemical process (for example, diagram the process of glycolysis, the Krebs cycle, and the electron transport chain, showing how various products from one step start another, and write proper chemical equations to represent the diagram)
2.5	No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content
2.0	CRP1 —The student will recognize or recall specific vocabulary (for example, <i>adenosine triphosphate (ATP)</i> , <i>ATP synthase</i> , <i>Calvin cycle</i> , <i>carbon fixation</i> , <i>chlorophyll</i> , <i>chloroplast</i> , <i>electron transport chain</i> , <i>NADPH</i> , <i>photosynthesis</i> , <i>stroma</i> , <i>thylakoid</i> , and perform basic processes such as: • Write balanced chemical equations that represent photosynthesis ($6\text{CO}_2 + 6\text{H}_2\text{O} + \text{Energy} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$) • Explain how plants use the products of photosynthesis (glucose and oxygen) • Explain how photosynthetic plants obtain light, water, and carbon dioxide to power the photosynthetic process • Diagram the parts of a plant that are involved in light-dependent photosynthesis and describe their roles (for example, thylakoid, photosystem one and photosystem two, chlorophyll, chloroplast) • Explain the movement of electrons during the process of light-dependent photosynthesis (photon is absorbed by chlorophyll in the thylakoid, electrons become excited, electrons are channeled into photosystem two and an electron transport chain, electrons power the movement of hydrogen ions, electrons are shuttled to photosystem one to be reenergized, electrons pass through an electron transport chain, electrons combine with NADP ⁺ to create NADPH) • Explain how photolysis replaces electrons lost by photosystem two • Explain how hydrogen ions pumped from the stroma to the thylakoid create a concentration gradient • Explain how ATP synthase (powered by the concentration gradient) creates ATP • Explain the carbon fixation aspect of the Calvin cycle ($3\text{RuBP} + 3\text{CO}_2 \rightarrow 6\text{ 3-phosphoglycerate}$) • Explain reduction in the Calvin cycle ($6\text{ 3-phosphoglycerate} + 6\text{ ATP} + 6\text{ NADPH} \rightarrow 1\text{ G3P}$ goes on to become glucose or fructose and 5 G3P moves on to the regeneration phase) CRP2 —The student will recognize or recall specific vocabulary (for example, <i>acetyl CoA</i> , <i>aerobic</i> , <i>anaerobic</i> , <i>cellular respiration</i> , <i>fermentation</i> , <i>glycolysis</i> , <i>Krebs cycle</i> , <i>lactic acid</i> , <i>NADH</i> , <i>pyruvate</i> , and perform basic processes such as:
1.5	Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 content and score 3.0 content
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

4.0 ELEMENT

3.0 ELEMENT

2.0 CONTENT