



Text Complexity Analysis of

NASA Moon Mission Shares Insights into Giant Impacts *(title)*

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Recommended Complexity Band: 9-10

Qualitative Measures

Meaning/Purpose: *(Briefly explain the levels of meaning (Literary Text) or purpose (Informational Text.)* The purpose of this text is to highlight new research into how large craters have formed on the moon. The first two paragraphs of the text help readers identify the author's purpose for writing.

Text Structure: *(Briefly describe the structure, organization, and other features of the text.)* The text is organized in an easy to follow manner. The text explains the research, then reveals the significance of the research, and then provides more detail on the research process, including information on the second study. The text includes a brief summary ("fast facts") at the beginning of the text, as well as two images and one caption to help explain the content. The text structure is mostly descriptive. The text headings help readers more easily navigate the text.

Language Features: *(Briefly describe the conventions and clarity of the language used in the text, including the complexity of the vocabulary and sentence structures.)* The sentence structure is mostly complex. Many domain-specific vocabulary words are used (e.g., *basin, crater, geology, concentric, gravity signature, lunar, moon's crust*) as well as many academic words (e.g., *impact, mosaic, ejected, unravel, probe, remnant, transient, rebounds, enigma, correlate*). Several non-literal expressions may pose a challenge: "teased out" and "shed light." Some of the domain-specific terms refer to abstract concepts.

Knowledge Demands: *(Briefly describe the knowledge demands the text requires of students.)* The reader should have some background knowledge on how a planetary body is formed, including the geologic processes that affect the surface features. Readers should also understand how impact craters are formed, and how common they are due to the gravitational pull of a planetary body.

Text Description

Briefly describe the text: This informational text supports reading in the content area. The GRAIL mission is a research project tasked with studying large impact basins. Orientale basin is a giant, ringed impact crater on Earth's moon. Until now, how impact craters with rings form had not been well understood. Scientists have reconstructed Orientale's formation using data from NASA's GRAIL mission.

Quantitative Measures

Complexity Band Level (provide range): Above 11-12

The text falls above the 11-12 grade band according to a quantitative reading measure.

Considerations for Reader and Task

Below are factors to consider with respect to the reader and task.

Potential Challenges this Text Poses:

The content requires a good deal of background information for content and vocabulary, but once addressed, it will allow students to enhance their understanding of the factors involved in crater formation.

While the text covers some familiar concepts (formation of craters on the moon), some complex explanations are also included that will require more of the reader. This includes concepts of modeling.

A number of the domain-specific terms refer to abstract concepts; utilizing images to help students visualize these concepts would be helpful.

In the article, there are some acronyms and many titles for people's job descriptions; these may slow down struggling readers.

Recommended Placement

Briefly explain the recommended placement of the text in a particular grade band: This text falls just above the 11-12 grade band, but students will bring some background knowledge from middle grades science courses, especially grade 8, to help them with the concepts in the text. The vocabulary, sentence structure, and subject matter knowledge should be appropriately challenging for students in grades 9-10. In sum, this text is recommended for students in grade band 9-10.