Text Complexity Analysis of

All We are is Dust in the Interstellar Wind *(title)*

NSF/Sara Dwyer *(author)*

Recommended Complexity Band: 9-10

Qualitative Measures

Meaning/Purpose: *(Briefly explain the levels of meaning (Literary Text) or purpose (Informational Text.)* The subtitle of the article provides clues to its purpose. The purpose of the article is to describe the problems that interstellar dust creates for astronomers and how scientists have created a 3-D map of interstellar dust reddening in the Milky Way galaxy that will help them in their research.

Text Structure: *(Briefly describe the structure, organization, and other features of the text.)* This article uses mostly descriptive and problem/solution text structures. It starts by discussing what interstellar dust is and the problems associated with it. Then the article moves on to how astronomers are developing new 3-D maps and trying to integrate them with other data. This would allow astronomers to have a map of much of the interstellar dust reddening, which will allow them to make adjustments to their predictions and/or results. The headings and image may be helpful for some readers.

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 article uses quite a few domain-specific words (e.g., *cosmic dust, astronomer, atomic, stellar nurseries, interstellar, optical telescope, reddening, nebula, comets, asteroids, universe, galactic, infrared wavelengths, terabytes, supernova*) and academic terms (e.g., *absorbing, obscure, saturated*) and higher level words like intrinsic. The text also has many instances of non-literal language (e.g., *"galactic fender benders," "drop in the bucket," "sweep under the rug," "ghostly trails," "factories of cosmic chemistry"*).

Knowledge Demands: *(Briefly describe the knowledge demands the text requires of students.)* General knowledge about the evolution of stars and how planets form would be helpful. Students would also benefit from a basic understanding of the electromagnetic spectrum.

Text Description

Briefly describe the text: This informational text is designed to support reading in the content area. The article describes cosmic dust and the effects it leaves on the galaxy when it comes in contact with astronomical phenomenon. The interstellar dust can cause a distortion of astrological observations, called reddening. This can cause false data being reported because, for one, color is used to determine the age of a star. The article addresses how astronomers have produced a 3-D map of interstellar reddening for three-quarters of the visible sky.

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 text has a high quantitative measure particularly due to the numerous domain specific words used. To grasp the basics of the article (what the problem is, how the scientists attempted to devise a solution through creation of 3-D maps, and the significance of their research), students will need to have some background knowledge of star formation and their life cycle, as well as a basic understanding of the electromagnetic spectrum. Struggling readers may need support with the non-literal expressions. Visual readers may appreciate supporting images to accompany the various outside references in the text (e.g., Milky Way galaxy, Orion Nebula, Horsehead Nebula, Pillars of Creation, Andromeda galaxy), as well as images of cosmic dust and the telescopes referenced at the end of the article.

Recommended Placement

Briefly explain the recommended placement of the text in a particular grade band: This text does have a high quantitative measure, but the purpose is pretty easy to determine and the text's organization is clear and easy to follow. With some background in stellar evolution, which would help students with the numerous domain-specific words that are used, this text should be appropriately complex for students in the 9-10 grade band.

Reviewed by: Jennifer Heflick, Brevard County Schools, 6/12/2016 (Name, School District, Date)