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Student Understanding of Energy Concepts Across Disciplinary Boundaries[1] JESSICA TROTTIER, ALESSANDRA HUGHES, BRITTANY MORENO, TODD HASKELL, EMILY BORDA, Western Washington University, SARA JULIN, Whatcom Community College, ANDREW BOUDREAUX, Western Washington University — In most undergraduate curricula, students are expected to have the ability to apply, or transfer, a learned concept to new coursework. In the sciences, students are often introduced to energy ideas with discipline-specific vocabulary and tasks which encourage compartmentalized, surface-level understandings of energy concepts. Our research investigates student transfer of energy ideas within a coherent science course series, where physics is the foundational course. Similar modeling tools and vocabulary are usedin the classes to help students see energy as a unifying framework. We seek to identify and describe what transfer looks like in this idealized context by interviewing students enrolled in the next three science courses in the series. They are asked to describe and explain scientific phenomena they have not yet encountered, but to which it is possible to apply energy concepts from the prerequisite physics course. Our qualitative analysis focuses on the identification of the energy concepts students utilize during their reasoning process. We aim to better understand the resources students activate and the obstacles they encounter when attempting this transfer.

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