Over the last 20 years there has been an extensive amount of research on science learning conducted from a “knowledge-in-pieces” or “resources” perspective. One of the main goals of that research has been to identify and characterize available cognitive knowledge resources that can be productive components of scientific understanding. In relation to characterizing available knowledge resources, the research, adopting the resource perspective, has focused on finding out and describing the continuity between the novice/learner and expert in various scientific domains. However, even though there exists an extensive amount of studies with a clear focus on characterizing available cognitive knowledge resources, research with a special focus on the role of language in relation to thermodynamics adopting a resource perspective is limited. In this thesis, on the one hand I describe challenges that can be related to language and, on the other hand, I identify possible available resources in the form of conceptual metaphors. Based on the results from the first two papers included in this thesis I show, among other things, the ambiguity of the physical concept of entropy. Furthermore, the result of paper two also highlights that there is an ambiguity in the words used as source domain words for metaphors that include entropy. For instance, source domain words such as ‘disorder’ in the metaphor ‘entropy is disorder’ turn out not to be as unambiguous as one might first think. In addition, in papers three and four, I highlight how very experienced people construe entropy in both written text and in a problem-solving situation based on textbook analyses and interviews. The included texts for analyses, in paper three, represented university textbooks on introductory physics, chemistry and statistical mechanics. In addition, all the texts covered macroscopic and microscopic accounts (as well as links between the two) of thermodynamics. The results from the text book analyses show that there is a systematic difference between the conceptual metaphors used for macroscopic and microscopic descriptions. In addition, the largest number of conceptual metaphors was identified at the macroscopic level. The problem-solving situation, in paper four, was structured around three thermodynamic problems where two PhD students worked together in pairs while they solved the three tasks. In addition, the problem-solving situation was captured by use of audio and video recordings. From the problem-solving situation I show, among other things, that a single conceptual metaphor was used in a sustained way to ground reasoning and, in addition, a number of conceptual metaphors were coordinated with each other and with other symbolic forms in a coherent way. In sum, the results of this thesis indicate that adopting tools from other disciplines, such as cognitive linguistics, may contribute to the field of science education.