Taxonomy learning is an important task for knowledge acquisition, sharing, and classification as well as application development and utilization in various domains. To reduce human effort to build a taxonomy from scratch and improve the quality of the learned taxonomy, we propose a new taxonomy learning approach, named TaxoFinder. TaxoFinder takes three steps to automatically build a taxonomy. First, it identifies domain-specific concepts from a domain text corpus. Second, it builds a graph representing how such concepts are associated together based on their co-occurrences. As the key method in TaxoFinder, we propose a method for measuring associative strengths among the concepts, which quantify how strongly they are associated in the graph, using similarities between sentences and spatial distances between sentences. Lastly, TaxoFinder induces a taxonomy from the graph using a graph analytic algorithm. TaxoFinder aims to build a taxonomy in such a way that it maximizes the overall associative strengths among the concepts in the graph to build a taxonomy. We evaluate TaxoFinder using gold-standard evaluation on three different domains: emergency management for mass gatherings, autism research, and disease domains. In our evaluation, we compare TaxoFinder with a state-of-the-art subsumption method and show that TaxoFinder is an effective approach significantly outperforming the subsumption method.