Text clustering in the context of Natural Language Processing (NLP) refers to the process of grouping a set of texts in such a way that texts in the same group (called a cluster) are more similar to each other than to those in other clusters. It is an unsupervised learning technique, meaning it does not rely on pre-labeled data for training. Instead, it identifies patterns and similarities within the data itself to form clusters.

The process of text clustering involves several key steps:

1. **Text Preprocessing**: Before clustering, texts usually undergo preprocessing to improve the quality of the clustering results. This can include steps like converting all text to lower case, removing punctuation and stop words (common words that are usually removed in NLP tasks, such as "and", "the", etc.), stemming or lemmatization (reducing words to their base or root form), and tokenization (splitting text into individual words or tokens).

2. **Feature Extraction**: This step converts text data into numerical or vector form so that it can be processed by clustering algorithms. Common methods include the Bag of Words (BoW) model and TF-IDF (Term Frequency-Inverse Document Frequency) vectors. Recently, embeddings generated by models like Word2Vec, GloVe, or BERT have become popular for capturing more nuanced semantic similarities between texts.

3. **Clustering Algorithm Application**: Several clustering algorithms can be applied to the vectorized text data. Common algorithms include K-means, Hierarchical clustering, DBSCAN (Density-Based Spatial Clustering of Applications with Noise), and more sophisticated methods that can handle the high dimensionality and sparse nature of text data.

4. **Evaluation**: Evaluating the quality of text clusters can be challenging, especially because unsupervised learning does not rely on labeled data for guidance. Metrics such as Silhouette Score, Davies-Bouldin Index, or internal evaluation methods that measure the coherence and separation of clusters can be used. In some cases, manual evaluation might be necessary to ensure that the clusters make sense from a human perspective.

Text clustering has various applications, including:

- **Document Organization**: Automatically grouping documents by topic for easier navigation and retrieval.

- **Information Retrieval**: Improving search results by clustering similar documents.

- **Topic Discovery and Modeling**: Identifying underlying topics in large text corpora.

- **Summarization**: Generating summaries of text by identifying and condensing similar information.

By effectively grouping similar texts, text clustering aids in uncovering hidden structures within data, facilitating more efficient information retrieval, and providing insights into large datasets.