In [1]:

```
#1
import numpy as np
import pandas as pd
import nltk
from nltk.corpus import stopwords
from textblob import TextBlob
from wordcloud import WordCloud
import matplotlib.pyplot as plt

from nltk.tokenize import sent_tokenize
# Open the corpus text file.
with open("/Users/eli/Documents/433/hw10f.txt", "r") as f:
    corpus = f.read()

# Tokenize the corpus into sentences.
sentences = sent_tokenize(corpus)

# Count the total number of sentences.
total_sentences = len(sentences)

# Print the total number of sentences.
print("Total number of sentence tokens in the corpus:", total_sentence
```

```
Total number of sentence tokens in the corpus: 23
```

In [2]:

```
#2
# Tokenize the text into words
words = nltk.word_tokenize(corpus)
# Tag the words to identify noun phrases
word_tags = nltk.pos_tag(words)
noun_phrases = [word for word, pos in word_tags if pos.startswith("NN"
print("Noun phrases discussed in the corpus:", noun_phrases)
```

```
Noun phrases discussed in the corpus: ['George', 'Mason', 'campus', '
space', 'people', 'races', 'George', 'Mason', 'school', 'teachers', '
students', 'area', 'students', 'opportunities', 'school', 'school', '
George', 'Mason', 'professors', 'COVID', 'campus', 'times', 'lot', 'a
menities', 'students', 'college', 'others', 'campus', 'emails', 'scho
larships', 'internship', 'opportunities', 'school', 'anyone', 'things
', 'activities', 'atmosphere', 'George', 'Mason', 'Patriot', 'commute
r', 'college', 'college', 'experience', 'feel', 'college', 'classes',
'online', 'courses', 'bit', 'adjustment', 'person', 'time', 'online',
'courses', 'pandemic', 'difficulties', 'help', 'assignments', 'projec
ts', 'resources', 'courses', 'note', 'school', 'people', 'aid', 'peop
le', 'departments', 'amounts', 'money', 'THIS', 'PANDEMIC', 'PAPERWOR
K', 'classes', 'school']
```

In [3]:

```
#3

# a. Total words
total_words = len(words)
print("Total words:", total_words)

# b. Total stop words
stop_words = set(stopwords.words("english"))
total_stop_words = len([word for word in words if word.lower() in stop
print("Total stop words:", total_stop_words)

# c. Total non-stop words
total_non_stop_words = total_words - total_stop_words
print("Total non-stop words:", total_non_stop_words)
```

```
Total words: 407
Total stop words: 193
Total non-stop words: 214
```

In [4]:

```
# 4. Sentiment Analysis
# Calculate the overall sentiment of the corpus
corpus_sentiment = TextBlob(corpus)
# a. Overall subjectivity score
subjectivity_score = corpus_sentiment.sentiment.subjectivity
# b. Overall polarity score
polarity_score = corpus_sentiment.sentiment.polarity

# Explanation
#subjectivity_explanation = "Subjectivity measures the extent to which
#polarity_explanation = "Polarity measures the sentiment (positive: >0
```

In [5]:

```
#5
# Explanation for sentiment scores
subjectivity_explanation = "Subjectivity measures the extent to which
polarity_explanation = "Polarity measures the sentiment (positive: >0,

print("a. Overall subjectivity score:", subjectivity_score)
print("b. Overall polarity score:", polarity_score)
print(subjectivity_explanation)
print(polarity_explanation)
```

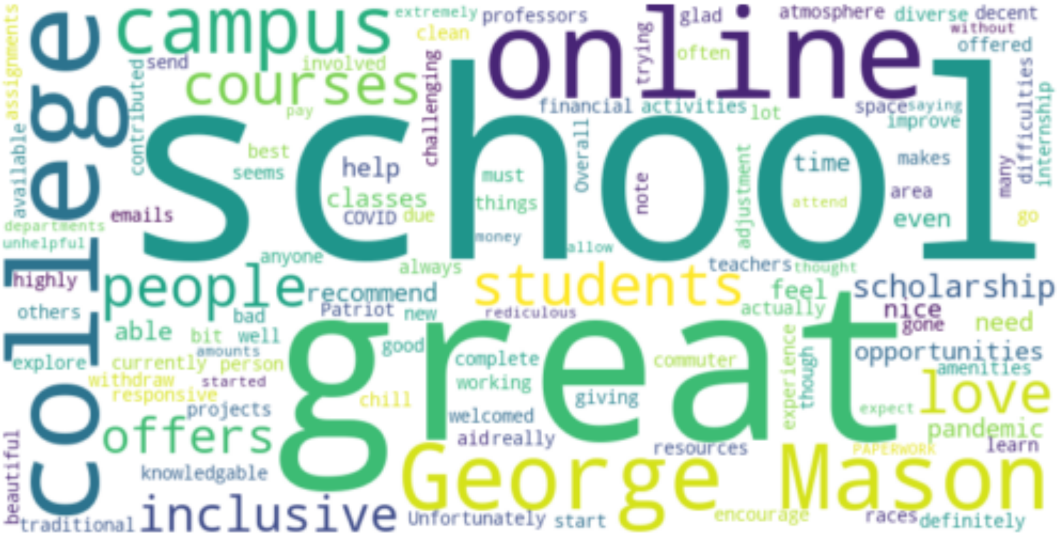
```
a. Overall subjectivity score: 0.5244604582409461
b. Overall polarity score: 0.3152060236511456
Subjectivity measures the extent to which text is subjective (0.0 = o
bjective, 1.0 = subjective).
Polarity measures the sentiment (positive: >0, neutral: 0, negative:
<0) of the text.
```

In [6]:
```
# 6. Use a for statement to iterate on each sentence in the corpus to
# and store them in a variable.
sentence_sentiments = []
for sentence in sentences:
    sentence_sentiment = TextBlob(sentence).sentiment.subjectivity
    sentence_sentiments.append(sentence_sentiment)

# Display the first five subjectivity scores
print("First five subjectivity scores:", sentence_sentiments[:5])
```

```
First five subjectivity scores: [0.25, 0.44999999999999996, 0.375, 0.
5, 0.5]
```

In [7]:
```
# 7. Data Visualization: Develop a word cloud using the text data.
# Set random_state to 433 and background_color to white
wordcloud = WordCloud(width=800, height=400, background_color="white",
# Remove x-axis and y-axis ticks
plt.axis("off")
plt.imshow(wordcloud, interpolation="bilinear")
plt.show()
```

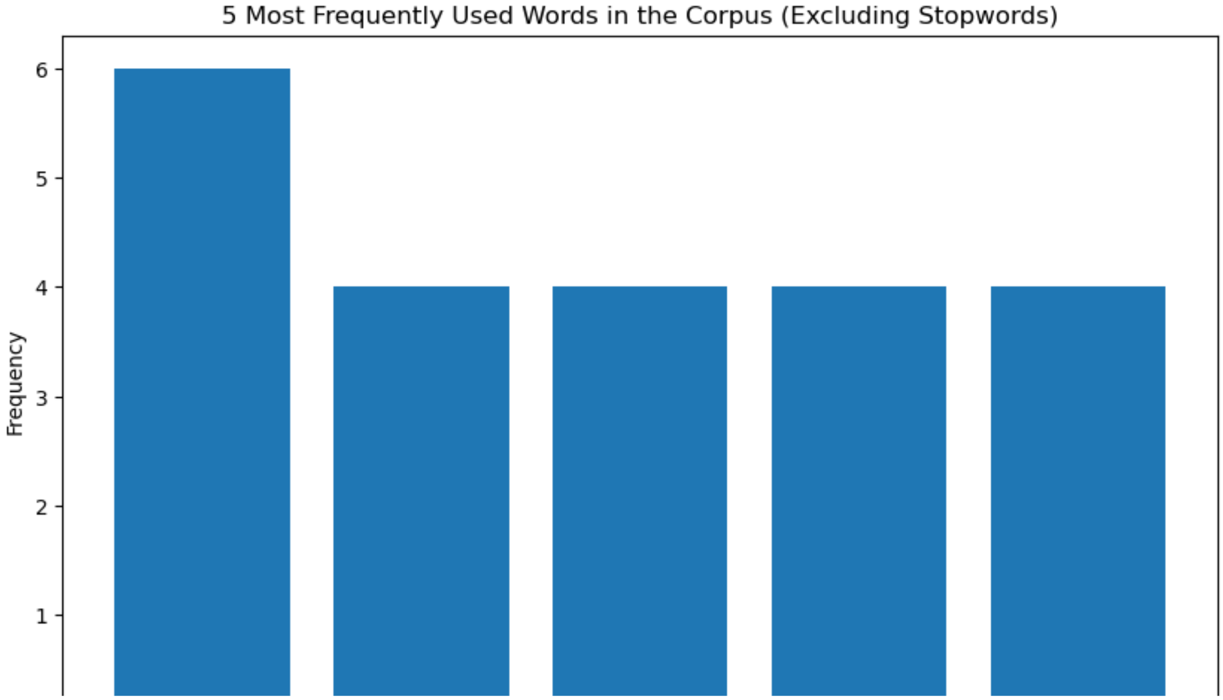


In [8]:
```
# 8. Create a bar chart showing the 5 most frequently used words in th
# Calculate word frequencies
word_frequencies = nltk.FreqDist([word.lower() for word in words if wo
# Get the 5 most common words
most_common_words = word_frequencies.most_common(5)
```

In [9]:
```
# Extract words and frequencies for the chart
words_chart = [word for word, freq in most_common_words]
frequencies_chart = [freq for word, freq in most_common_words]
```

In [10]:

```
# Create the bar chart
plt.figure(figsize=(10, 6))
plt.bar(words_chart, frequencies_chart)
plt.xlabel("Words")
plt.ylabel("Frequency")
plt.title("5 Most Frequently Used Words in the Corpus (Excluding Stopw
plt.show()
```



In [ ]: