TAR Course Analysis

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Contents

Loading the packages and building the url

```r
library(rvest)
library(tidytext)
library(tidyverse)
library(topicmodels)
```

```r
urlBase <- sprintf("https://e-discoveryteam.com/tar-course/tar-course-")

target <- map(1:17, function(i) {
  if (i == 1) {
    paste(urlBase, i, "st-class/", sep = "")
  } else if (i == 2) {
    paste(urlBase, i, "nd-class/", sep = "")
  } else if ( i == 3) {
    paste(urlBase, i, "rd-class/", sep = "")
  } else {
    paste(urlBase, i, "th-class/", sep = "")
  }
})
```

Borrowing some data

Utilizing purrr's `map` function I am able to loop over my `target` list and plug each element into rvest's `read_html()` function. This returns a list of pages that I can then loop over again to get a list of the text elements I'm after.

```r
texts <- map(target, read_html)

text_list <- map(texts, function(i) {
  (html_text(html_nodes(i, ".entry")))
})
```

Converting *borrowed* data from a list to a Data_Frame

Tokenizing the text – using the Tidy Text method `unnest_tokens()` – arranges the data into a Tidy format of one term per row. This makes removing standard stop words easy with an `anti-join`.

```r
text_df <- data_frame(text = unlist(text_list), Article = 1:17)

text_df <- text_df %>%
  unnest_tokens(word, text)

text_df %>%
  anti_join(stop_words) %>%
  count(word, sort = TRUE)
```

```
## Joining, by = "word"
```

```
## # A tibble: 3,918 x 2
##          word     n
##         <chr> <int>
##  1  documents   349
##  2     review   328
##  3     search   289
##  4   document   228
##  5     coding   217
##  6 predictive   208
##  7   training   205
##  8    machine   194
##  9       step   177
## 10  discovery   159
## # ... with 3,908 more rows
```

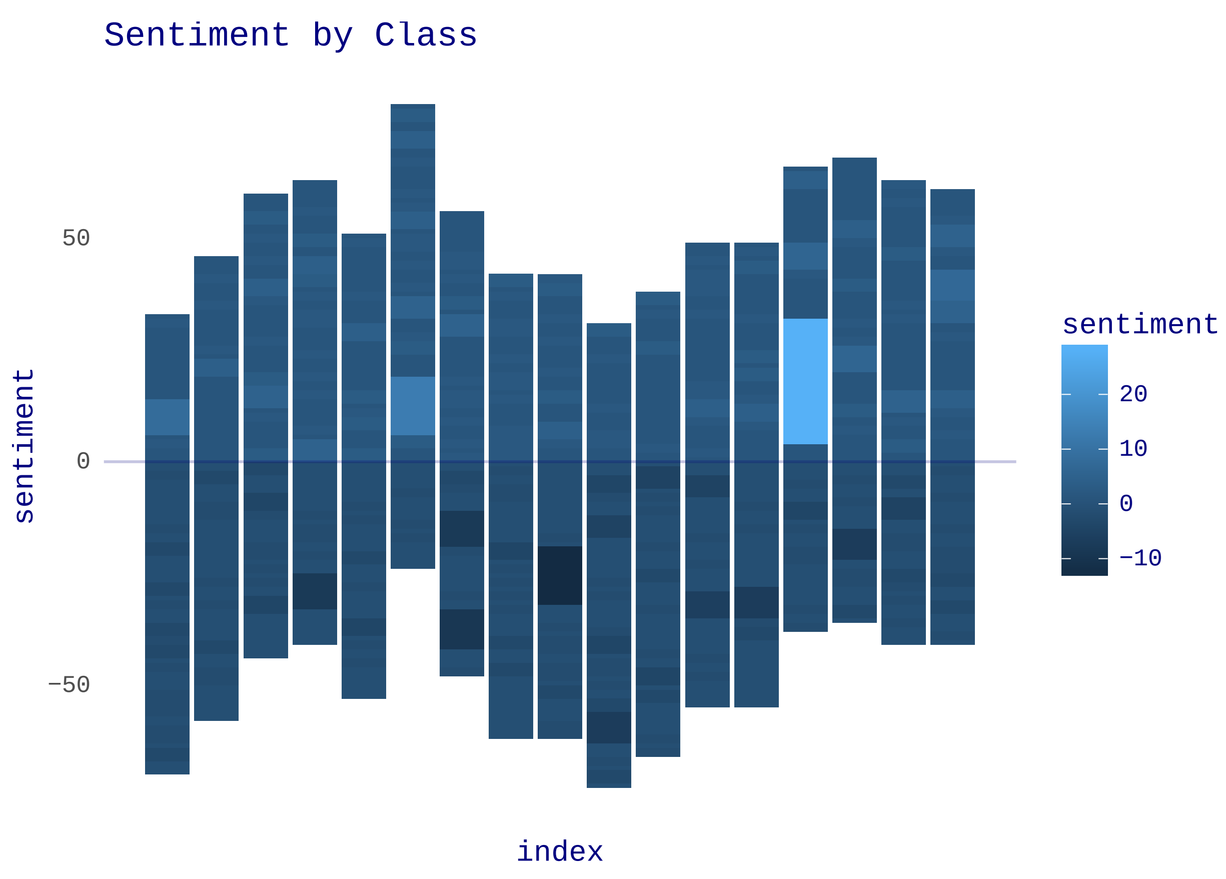
Taking a look at the authors state of mind

Simple sentiment analysis of the courses. Each class is chuncked together and plotted with each word's sentiment score colored by degree of positive or negative.

```r
text_sentiment <- text_df %>%
  anti_join(stop_words) %>%
  inner_join(get_sentiments("bing")) %>%
  count(word, index = row_number() %/% 104, sentiment) %>%
  spread(sentiment, n, fill = 0) %>%
  mutate(sentiment = positive - negative)
```

```
## Joining, by = "word"
## Joining, by = "word"
```

```r
ggplot(text_sentiment, aes(index, sentiment, fill = sentiment)) +
  geom_col() +
  geom_hline(aes(yintercept = 0), alpha = 0.23, col = "navy") +
  theme(panel.background = element_blank(),
        text = element_text(family = "mono", color = "navy"),
        axis.ticks = element_blank(),
        axis.text.x = element_blank()) +
  ggtitle("Sentiment by Class ")
```



TF_IDF — Looking at what terms are most important to the overall text.

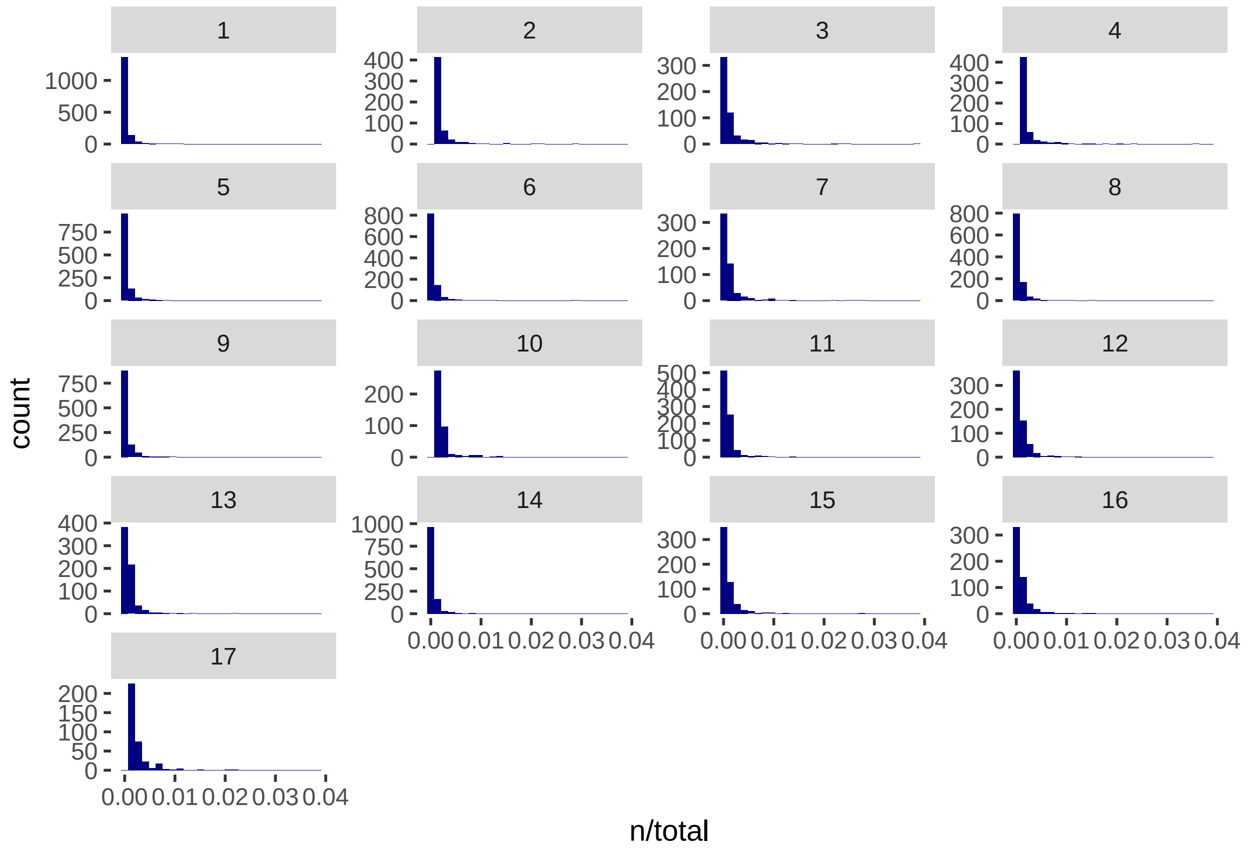
```
article_words <- text_df %>%
  count(Article, word, sort = TRUE)

total_words <- article_words %>%
  group_by(Article) %>%
  summarise(total = sum(n))

article_words <- left_join(article_words, total_words)
```

```
## Joining, by = "Article"
```

```
article_words
```

```
## # A tibble: 13,356 x 4
##    Article  word     n total
##      <int> <chr> <int> <int>
##  1       1   the   524  7938
##  2       6   the   312  4417
##  3      14   the   310  5383
##  4       1    of   302  7938
##  5       9   the   253  4542
##  6       5   the   250  4592
##  7       1   and   195  7938
##  8       8   the   188  3479
## 9        1     to    182  7938
## 10      14     of    160  5383
## # ... with 13,346 more rows
```

```
ggplot(article_words, aes(n/total)) +
  geom_histogram(fill = "navy", show.legend = FALSE) +
  facet_wrap(~Article, ncol = 4, scales = "free_y") +
  xlim(NA, 0.04) +
  theme(panel.background = element_blank())
```



```
article_words <- article_words %>%
  bind_tf_idf(word, Article, n)
```

Stop Words

Creating a list of custom stop words requires nothing more than a column in a data frame. Here I'm choosing to pull out some random numbers and the _____ that were used to break sections of each article.

```
myStopWords <- data_frame(word = c("_____", "193", "502", "d", "95", "2.5", "2006", "california", "ralp
```

```
article_words %>%
  anti_join(myStopWords) %>%
  select(-total) %>%
  arrange(desc(tf_idf)) %>%
  top_n(20)
```

```
## Joining, by = "word"
## Selecting by tf_idf
```

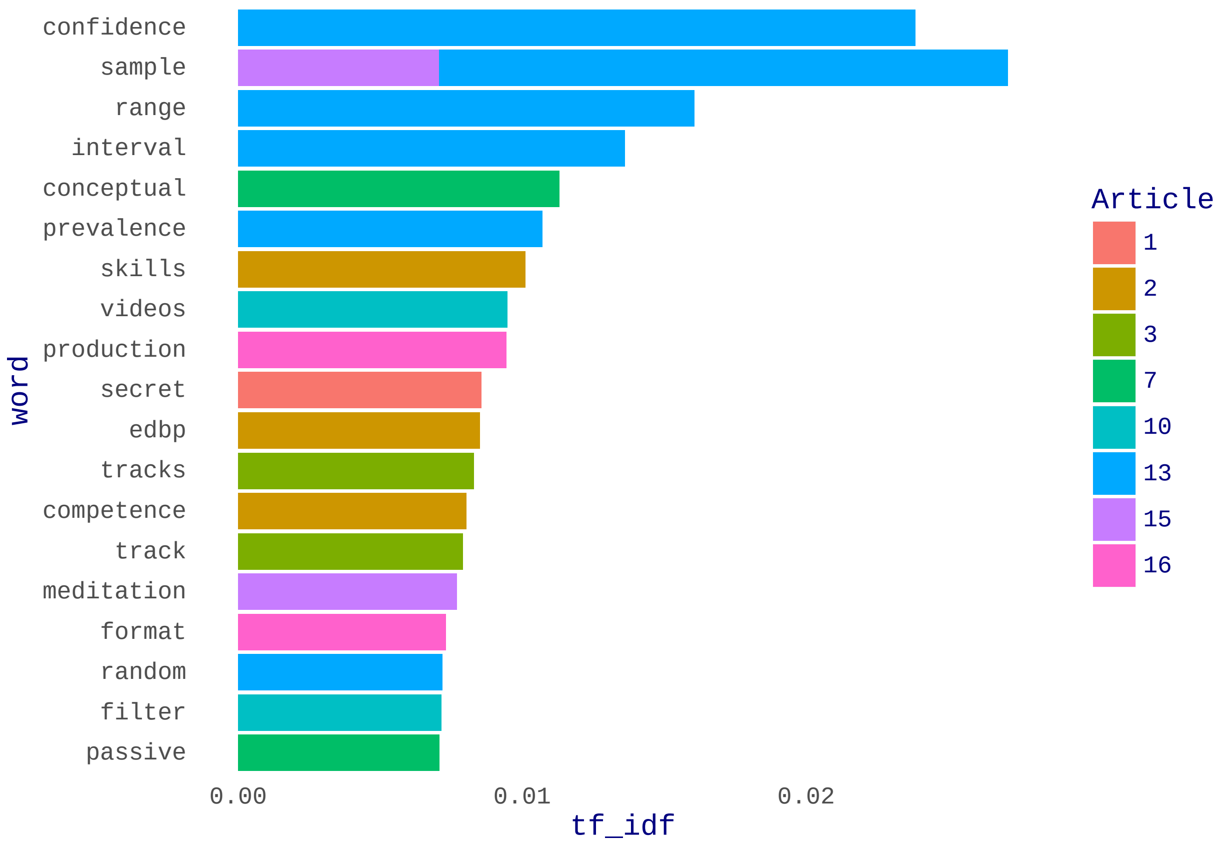
```
## # A tibble: 20 x 6
##    Article       word     n          tf       idf      tf_idf
##      <int>      <chr> <int>       <dbl>     <dbl>       <dbl>
##  1      13 confidence    28 0.011142061 2.1400662 0.023844748
##  2      13     sample    29 0.011539992 1.7346011 0.020017282
##  3      13      range    33 0.013131715 1.2237754 0.016070270
##  4      13   interval    16 0.006366892 2.1400662 0.013625570
##  5       7 conceptual     6 0.003994674 2.8332133 0.011317763
##  6      13 prevalence    22 0.008754477 1.2237754 0.010713514
##  7       2     skills    11 0.008264463 1.2237754 0.010113847
##  8      10     videos     3 0.003348214 2.8332133 0.009486205
##  9      16 production    23 0.014857881 0.6359888 0.009449446
## 10       1     secret    24 0.003023432 2.8332133 0.008566027
## 11       2       edbp     4 0.003005259 2.8332133 0.008514540
## 12       3     tracks     6 0.003880983 2.1400662 0.008305561
## 13       2 competence     5 0.003756574 2.1400662 0.008039317
## 14       3      track    10 0.006468305 1.2237754 0.007915753
## 15      15 meditation     4 0.002719239 2.8332133 0.007704183
## 16      16     format     4 0.002583979 2.8332133 0.007320965
## 17      13     random    24 0.009550338 0.7537718 0.007198776
## 18      10     filter     3 0.003348214 2.1400662 0.007165400
## 19       7    passive    12 0.007989348 0.8873032 0.007088974
## 20      15     sample     6 0.004078858 1.7346011 0.007075191
```

```r
plot_article <- article_words %>%
  anti_join(myStopWords) %>%
  arrange(desc(tf_idf)) %>%
  mutate(word = factor(word, levels = rev(unique(word))))
```

```
## Joining, by = "word"
```

```r
plot_article %>%
  top_n(20) %>%
  ggplot(aes(word, tf_idf, fill = factor(Article))) +
  geom_col()+
  scale_fill_discrete(guide = guide_legend(title = "Article")) +
  coord_flip() +
  theme(panel.background = element_blank(),
        text = element_text(family = "mono", color = "navy"),
        axis.ticks = element_blank())
```

```
## Selecting by tf_idf
```



confidence
sample
range
interval
conceptual
prevalence
skills
videos
production
secret
edbp
tracks
competence
track
meditation
format
random
filter
passive
word
0.00
0.01
0.02
tf_idf
Article
1
2
3
7
10
13
15
16