```r
#This script creates a lingusitic network based on the empirical
texts corpus
#It will write a comma separated variables file called
"listNodesEmpirical.csv" to the working directory
#The end product is allNetEmpirical to be used in furher analyses.

#First load necessary packages
library(tm)
library(igraph)

#Read in corpus
allEmpirical <-Corpus(DirSource("textsEmpirical", encoding="UTF-8"),
readerControl = list(language="lat"))
#Perform basic text-mining preprocessing
allEmpirical<-tm_map(allEmpirical,tolower)
allEmpirical<-tm_map(allEmpirical,removePunctuation)
allEmpirical<-tm_map(allEmpirical,stripWhitespace)

#Algorithmic rules
#These take the form of searching for and replacing a number of
words throughout the corpus
#The substituted words follow the =-sign after 'pattern' in each
line. These words are replaced with 'replacement'.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<accompanies\\>|\\<accompanying\\>)", replacement =
"accompanied")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "accordingly", replacement = "according")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<achieve2013\\>|\\<achieving\\>)", replacement =
"achieve")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<acknowledged\\>|\\<acknowledges\\>)", replacement =
"acknowledge")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<acquisition\\>|\\<acquiring\\>|\\<acquired\\>)",
replacement = "acquire")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<acting\\>|\\<acted\\>|\\<acts\\>)", replacement =
"act")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "actions", replacement = "action")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "actively", replacement = "active")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "activities", replacement = "activity")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<actuality\\>|\\<actually\\>)", replacement =
"actual")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "adaptively", replacement = "adaptable")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<additionally\\>|\\<additional\\>|\\<addition\\>|\
\<adding\\>|\\<added\\>)", replacement = "add")
```

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allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<addressing\\>|\\<addressed\\>)", replacement =
"address")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "adults", replacement = "adult")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "advancing", replacement = "advance")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "aesthetically", replacement = "aesthetic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "ages", replacement = "age")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "agreement", replacement = "agree")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<aimed\\>|\\<aims\\>)", replacement = "aim")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<allowing\\>|\\<allowed\\>|\\<allows\\>)", replacement
= "allow")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "alongside", replacement = "along")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<analysis\\>|\\<analyses\\>|\\<analysed\\>|\
\<analytical\\>|\\<analytic\\>|\\<analyze\\>|\\<analyzing\\>)",
replacement = "analyse")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<answered\\>|\\<answering\\>|\\<answers\\>)",
replacement = "answer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "appearance", replacement = "appear")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "applications", replacement = "application")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<applicable\\>|\\<applying\\>|\\<applied\\>)",
replacement = "apply")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "approaches", replacement = "approach")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<appropriately\\>|\\<appropriateness\\>)", replacement
= "appropriate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<argumentation\\>|\\<arguments\\>|\\<argument\\>|\
\<argues\\>|\\<argued\\>)", replacement = "argue")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<arisen\\>|\\<arises\\>|\\<arising\\>)",
replacement="arise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<articulated\\>|\\<articulating\
\>)",replacement="articulate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "artifacts", replacement = "artifact")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<asking\\>|\\<asks\\>)",  replacement = "ask")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "aspects", replacement = "aspect")
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allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<assigned\\>|\\<assigning\\>)", replacement =
"assign")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<associating\\>|\\<associated\\>|\\<association\
\>)",replacement = "associate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<assumption\\>|\\<assumptions\\>)",replacement =
"assume")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "attributed", replacement="attribute")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<became\\>|\\<becomes\\>|\\<becoming\\>)",
replacement="become")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<beginning\\>|\\<begins\\>)", replacement="begin")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "behaviors", replacement="behavior")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "attributed", replacement="attribute")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<beliefs\\>|\\<believed\\>)", replacement="belief")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "books", replacement="book")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "broader", replacement="broad")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<built\\>|\\<builds\\>)", replacement="build")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "capabilities", replacement="capability")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<carrying\\>|\\<carried\\>|\\<carries\\>)",
replacement="carry")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<categorization\\>|\\<classification\\>|\
\<categorizing\\>|\\<categorized\\>|\\<categorize\\>|\\<classified\
\>|\\<categories\\>|\\<classify\\>|\\<category\\>)",
replacement="category_classify")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<centered\\>|\\<centred\\>|\\<centre\\>)",
replacement="center")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "centrality", replacement="central")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<challenging\\>|\\<challenged\\>|\\<challenges\\>)",
replacement="challenge")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "changes\\>|\\<changed", replacement="change")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "characteristics", replacement="characteristic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<childs\\>|\\<child's\\>|\\<children\\>|\\<children's\
\>|\\<childrens\\>)", replacement="child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
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pattern = "(\\<choices\\>|\\<choosing\\>|\\<choose\\>|\\<chosen\\>|\
\<chose\\>)", replacement="choice")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<claimed\\>|\\<claims\\>)", replacement="claim")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "classes", replacement="class")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "classrooms", replacement="classroom")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<coconstructing\\>|\\<coconstructors\\>|\
\<coconstruction\\>)", replacement="coconstruct")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "cognitively", replacement="cognitive")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<collaborating\\>|\\<collaborations\\>|\
\<collaboration\\>|\\<collaboratively\\>|\\<collaborative\\>|\
\<collaborative\\>|\\<collaborators\\>|\\<collaborate\\>)",
replacement="collaborate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<collecting\\>|\\<collection\\>|\\<collected\\>)",
replacement="collect") #\\>|\\<collective ??
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<combination\\>|\\<combining\\>|\\<combined\\>)",
replacement="combine")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "comes", replacement="come")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<communicate\\>|\\<communicating\\>|\\<communication\
\>|\\<communicative\\>|\\<communicators\\>)",
replacement="communicate") #\\>|\\<communities ??
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<communitybased\\>|\\<communities\\>)",
replacement="community")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "comparison", replacement="compare")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "completing\\>|\\<completion", replacement="complete")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<complexities\\>|\\<complexity\\>)",
replacement="complexity")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "components", replacement="component")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<comprised\\>|\\<comprises\\>)",
replacement="comprise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "computers", replacement="computer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<conceptualization\\>|\\<conceptualizing\\>|\
\<conceptualized\\>|\\<conceptually\\>|\\<conceptualize\\>|\
\<conceptions\\>|\\<conception\\>|\\<conceptual\\>|\\<concepts\\>)",
replacement="concept")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<concerning\\>|\\<concerned\\>|\\<concerns\\>)",
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replacement="concern")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<concluding\\>|\\<conclusions\\>|\\<concluded\\>|\
\<conclude\\>)", replacement="conclusion")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<conducting\\>|\\<conducted\\>)",
replacement="conduct")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<confirmation\\>|\\<confirmed\\>)",
replacement="confirm")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "conflicts", replacement="conflict")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "conjectures", replacement="conjecture")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<connections\\>|\\<connection\\>|\\<connected\\>|\
\<connects\\>)", replacement="connect")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<consideration\\>|\\<considered\\>|\\<considers\\>)",
replacement="consider")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<consistently\\>|\\<consistency\\>)",
replacement="consistent")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<consists\\>|\\<consisted\\>|\\<consisting\\>)",
replacement="consist")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<constituted\\>|\\<constitutes\\>|\\<constituent\\>)",
replacement="constitute")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<constructing\\>|\\<constructive\\>|\\<construction\
\>|\\<constructed\\>|\\<constructs\\>)", replacement="construct")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "constructivist", replacement="constructivism")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<contexts'\\>|\\<contexts\\>|\\<context'\\>)",
replacement="context")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<contextsensitive'\\>|\\<contextualized\\>)",
replacement="contextual")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<continuously\\>|\\<continually\\>|\\<continuing\\>|\
\<continued\\>)", replacement="continue")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<conversational\\>|\\<conversations\\>)",
replacement="conversation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "correctly", replacement="correct")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<creating\\>|\\<created\\>|\\<creates\\>)",
replacement="create")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "creativity", replacement="creative")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
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pattern = "criteria", replacement="criterion")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "critically", replacement="critical")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<curricula\\>|\\<curricular\\>)",
replacement="curriculum")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<cyclical\\>|\\<cyclic\\>)", replacement="cycle")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "dealing", replacement="deal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "debates", replacement="debate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<decisionmaking\\>|\\<decisions\\>|\\<deciding\\>|\
\<decided\\>)", replacement="decision")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<deepened\\>|\\<deepening\\>|\\<deeper\\>|\\<deeply\
\>|\\<deepen\\>)", replacement="deep")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<definitions\\>|\\<defining\\>|\\<defined\\>)",
replacement="define") #ok?
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "degrees", replacement="degree")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<demonstration\\>|\\<demonstrated\\>|\\<demonstrating\
\>|\\<demonstrates\\>)", replacement="demonstrate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<depending\\>|\\<dependence\\>|\\<dependent\\>|\
\<depends\\>)", replacement="depend")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<depiction\\>|\\<depicts\\>)", replacement="depict")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<descriptions\\>|\\<descriptively\\>|\\<description\
\>|\\<describing\\>|\\<described\\>|\\<describes\\>|\\<describe\
\>)", replacement="describe_ption")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<designing\\>|\\<designed\\>)", replacement="design")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "detailed", replacement="detail")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<detection\\>|\\<detecting\\>)", replacement="detect")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "determinate", replacement="determine")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<developmentally\\>|\\<developmental\\>|\
\<development\\>|\\<developing\\>|\\<developed\\>|\\<develops\\>)",
replacement="develop")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<johndewey\\>|\\<dewey1991p108\\>|\\<dewey1956pp47-48\
\>|\\<dewey1910\\>|\\<deweys\\>)", replacement="dewey")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<difference\\>|\\<differences\\>|\\<differ\\>)",
replacement="different")
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allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<difficulty\\>|\\<dificult\\>)",
replacement="difficult")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<dimensions\\>)", replacement="dimension")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<discipline\\>|\\<disciplines\\>)",
replacement="discipline")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<discoveries\\>|\\<discovering\\>|\\<discovery\\>)",
replacement="discover")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<discussed\\>|\\<discussing\\>|\\<discussions\\>|\
\<discussion\\>)", replacement="discuss")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<display\\>|\\<displaying\\>)", replacement="display")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<distinction\\>|\\<distinctions\\>)",
replacement="distinction")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<distinguish\\>|\\<distinguished\\>)",
replacement="distinguish")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<domain\\>|\\<domains\\>|\\<domainspecific\\>)",
replacement="domain")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<drawings\\>|\\<drawing\\>|\\<drawn\\>|\\<draws\\>)",
replacement="draw")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<earlier\\>|\\<early\\>)", replacement="early")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<easier\\>|\\<easily\\>)", replacement="easy")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<educated\\>|\\<educational\\>|\\<education\\>|\
\<educative\\>)", replacement="education")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<effectively\\>|\\<effectiveness\\>|\\<effective\\>|\
\<effected\\>|\\<effects\\>)", replacement="effect")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<elaborated\\>|\\<elaborating\\>|\\<elaboration\\>)",
replacement="elaborate")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<embedded\\>|\\<embedding\\>|\\<embeds\\>)",
replacement="embed")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<emergent\\>|\\<emerges\\>|\\<emerging\\>)",
replacement="emerge")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<emphasise\\>|\\<emphasized\\>|\\<emphasizes\\>|\
\<emphasizing\\>|\\<emphasis\\>)", replacement="emphasize")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
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pattern = "(\\<employed\\>|\\<employing\\>)", replacement="employ")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<enables\\>|\\<enabling\\>)", replacement="enable")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<encouraged encourages\\>|\\<encouraging\\>)",
replacement="encourage")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<engaged engagement\\>|\\<engages\\>|\\<engaging\\>)",
replacement="engage")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "ends", replacement="end")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<enhancements\\>|\\<enhancing\\>)",
replacement="enhance")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<entities\\>)", replacement="entity")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<environments\\>|\\<environments\\>)",
replacement="environment")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<epistemologically\\>|\\<epistemological\\>)",
replacement="epistemic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<established\\>|\\<establishing\\>)",
replacement="establish")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<evaluated\\>|\\<evaluating\\>|\\<evaluations\\>|\
\<evaluation\\>)", replacement="evaluate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "eshachfried2005p327", replacement="eshachfried2005")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<examined\\>|\\<examines\\>|\\<examining\\>)",
replacement="examine")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<expansion\\>)", replacement="expand")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<experiences\\>)", replacement="experience")#|\
\<experiential\\>
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<experimental\\>|\\<experimentation\\>|\
\<experimenting\\>|\\<experimented\\>|\\<experiments\\>)",
replacement="experiment")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<explained\\>|\\<explaining\\>|\\<explains\\>)",
replacement="explain")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<explanations\\>|\\<explanatory\\>)",
replacement="explanation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<explicitly\\>)", replacement="explicit")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<explorations\\>|\\<exploration\\>|\\<exploratory\\>|\
\<explored\\>|\\<exploring\\>|\\<explores\\>)",
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replacement="explore")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<expressed\\>|\\<expressing\\>|\\<expression\\>)",
replacement="express")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<extended\\>|\\<extending\\>|\\<extends\\>)",
replacement="extend")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<facilitated\\>|\\<facilitates\\>|\\<facilitating\\>|\
\<facilitators\\>|\\<facilitator\\>)", replacement="facilitate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<facts\\>|\\<factual\\>)", replacement="fact")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<familiar\\>|\\<family\\>)", replacement="family")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<features\\>)", replacement="feature")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<finding\\>|\\<findings\\>)", replacement="find")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<floating\\>)", replacement="float")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<foci\\>|\\<focused\\>|\\<focuses\\>|\\<focusing\\>)",
replacement="focus")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<followed\\>|\\<following\\>)", replacement="follow")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<forms\\>)", replacement="form")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<formally\\>)", replacement="formal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<formats\\>)", replacement="format")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<formulating\\>|\\<formulation\\>)",
replacement="formulate")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<framed\\>|\\<frames\\>)", replacement="frame")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<frameworks\\>)", replacement="framework")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<freedom\\>)", replacement="free")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<french2004p147\\>)", replacement="french2004")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<fully\\>)", replacement="full")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<functioning\\>|\\<functions\\>)",
replacement="function")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gained\\>|\\<gaining\\>)", replacement="gain")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gathering\\>)", replacement="gather")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<generalization\\>|\\<generalizing\\>)",
replacement="general")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<generated\\>|\\<generates\\>|\\<generatingd\\>|\
\<generating\\>)", replacement="generate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<get\\>)", replacement="get")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gave\\>|\\<given\\>|\\<gives\\>|\\<giving\\>)",
replacement="give")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<goal-orientated\\>|\\<goals\\>|\\<goaloriented\\>)",
replacement="goal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<grades\\>)", replacement="grade")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<grain'\\>|\\<grained\\>)", replacement="grain")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<greater\\>|\\<greatly\\>)", replacement="great")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<grounds\\>)", replacement="grounded")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<grouped\\>|\\<groups\\>)", replacement="group")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<guidance\\>|\\<guided\\>|\\<guidelines\\>|\\<guides\
\>|\\<guiding\\>)", replacement="guide")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<higher\\>|\\<highly\\>)", replacement="high")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<hypotheses\\>|\\<hypothesizing\\>|\\<hypothesized\
\>)", replacement="hypothesis")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ideas\\>)", replacement="idea")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<identifiable\\>|\\<identification\\>|\\<identified\
\>|\\<identifying\\>|\\<identifies\\>)", replacement="identify")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<implies\\>)", replacement="imply")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<importance\\>)", replacement="important")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<included\\>|\\<includes\\>|\\<including\\>|\
\<inclusion\\>)", replacement="include")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<incorporates\\>|\\<incorporation\\>)",
replacement="incorporate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<increased\\>|\\<increases\\>|\\<increasing\\>|\
\<increasingly\\>)", replacement="increase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<independence\\>|\\<independently\\>)",
replacement="independent")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<indicated\\>|\\<indicates\\>)",
replacement="indicate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<individual's\\>|\\<individuals\\>)",
replacement="individual")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<inferences\\>|\\<inference\\>|\\<inferring\\>)",
replacement="infer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<influenced\\>|\\<influential\\>)",
replacement="influence")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<informative\\>|\\<informed\\>)",
replacement="inform")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<initially\\>)", replacement="initial")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<initiating\\>)", replacement="initiate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<inquirer\\>|\\<inquiries\\>|\\<inquiring\\>|\
\<inquirybased\\>)", replacement="inquiry")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<inspired\\>|\\<inspiring\\>)", replacement="inspire")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<instances\\>)", replacement="instance")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<instructional\\>|\\<instructionally\\>|\
\<instructions\\>)", replacement="instruction")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<integrated\\>|\\<integrating\\>|\\<integration\\>)",
replacement="integrate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<intentionally\\>|\\<intentions\\>|\\<intended\\>)",
replacement="intent")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<interacting\\>|\\<interactions\\>|\\<interact\\>|\
\<interacted\\>)", replacement="interaction")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<interpretively\\>|\\<interpretations\\>|\
\<interpretation\\>|\\<interpreted\\>|\\<interpreting\\>|\
\<interprets\\>)", replacement="interpret")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<introduced\\>|\\<introduces\\>|\\<introducing\\>|\
\<introduction\\>)", replacement="introduce")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<investigating\\>|\\<investigations\\>|\
\<investigation\\>|\\<investigated\\>)", replacement="investigate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<involved\\>|\\<involves\\>|\\<involving\\>)",
replacement="involve")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<judging\\>|\\<judgments\\>)", replacement="judge")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<kindergarteners\\>|\\<kindergartners\\>)",
replacement="kindergartener")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<kinds\\>)", replacement="kind")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<knew\\>|\\<knowing\\>|\\<known\\>|\\<knows\\>|\
\<knowledgeable\\>)", replacement="know") #but not knowledge,
because different connotation.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<labs\\>)", replacement="laboratory")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<larger\\>)", replacement="large")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<leading\\>|\\<leads\\>)", replacement="lead")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<learn\\>|\\<learned\\>|\\<learning\\>)",
replacement="learn")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<learners\\>|\\<learners'\\>)", replacement="learner")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lesser\\>)", replacement="less")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lessons\\>)", replacement="lesson")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<levels\\>)", replacement="level")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<listening\\>|\\<listens\\>)", replacement="listen")
#allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<living-nonliving\\>|\\<living\\>)", replacement=" ")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<locally\\>)", replacement="local")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<located\\>|\\<locations\\>)", replacement="location")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<logical\\>|\\<logically\\>)", replacement="logical")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<longer\\>)", replacement="longterm")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<looking\\>|\\<looked\\>)", replacement="look")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<losing\\>)", replacement="lose")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<major\\>|\\<majors\\>)", replacement="major") #HMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<makes\\>|\\<making\\>)", replacement="make")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<manageable\\>)", replacement="manage")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<manifest\\>|\\<manifested\\>)",
replacement="manifest")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<manipulating\\>|\\<manipulate\\>)",
replacement="manipulation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<map\\>|\\<mapping\\>)", replacement="map")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<master\\>|\\<mastery\\>)", replacement="master")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<material\\>|\\<materials\\>)",
replacement="material")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mathematically\\>|\\<mathematics\\>|\\<mathematic\\>|
\\<math\\>)", replacement="mathematical")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<meaning'\\>|\\<meaningful\\>|\\<meaningfully\\>|\
\<meanings\\>|\\<mean\\>)", replacement="meaning")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<measuring\\>|\\<measured\\>|\\<measurements\\>|\
\<measure\\>)", replacement="measurement")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<members\\>|\\<membership\\>)", replacement="member")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mental\\>|\\<mentally\\>)", replacement="mental")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<method\\>|\\<methods\\>)", replacement="method")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<midwest\\>|\\<midwestern\\>)", replacement="midwest")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<model\\>|\\<modelbased\\>|\\<modeling\\>|\
\<modelling\\>|\\<models\\>)", replacement="model")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<modified\\>|\\<modify\\>|\\<modifying\\>)",
replacement="modify")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<moment\\>|\\<moments\\>)", replacement="moment")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<movements\\>|\\<moves\\>|\\<moving\\>)",
replacement="move")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mutual\\>|\\<mutually\\>)", replacement="mutual")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<natural\\>|\\<naturally\\>)", replacement="natural")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<necessarily\\>)", replacement="necessary")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<needed\\>|\\<needs\\>)", replacement="need")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<newfound\\>)", replacement="new")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<normative\\>|\\<norms\\>)", replacement="norm")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<noted\\>|\\<notes\\>)", replacement="note")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<notions\\>)", replacement="notion")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<numbers\\>|\\<numeracy\\>|\\<numerical\\>)",
replacement="number") #HMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<objects\\>|\\<objects'\\>)", replacement="object")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<observations\\>|\\obervational data\\>)",
replacement="observation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<observed\\>|\\<observes\\>|\\<observing\\>)",
replacement="observe")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<obtaining\\>)", replacement="obtain")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<operates\\>)", replacement="operate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<opportunities\\>)", replacement="opportunity")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<organized\\>|\\<organizing\\>)",
replacement="organize")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<orientated\\>|\\<orientation\\>|\\<oriented\\>)",
replacement="orient")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<original\\>|\\<originally\\>)",
replacement="original")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<others'\\>)", replacement="others")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<outcomes\\>)", replacement="outcome")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<overarching\\>)", replacement="overall")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<participating\\>|\\<participation\\>|\
\<participatory\\>)", replacement="participate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<participants\\>)", replacement="participant")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<particularly\\>)", replacement="particular")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<partnerships\\>|\\<partnerships\\>|\\<partners\\>)",
replacement="partner")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<paths\\>|\\<pathway\\>)", replacement="path")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<patterns\\>)", replacement="pattern")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pedagogical\\>|\\<pedagogically\\>)",
replacement="pedagogy")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pedagogies\\>|\\<pedagogy\\>)",
replacement="pedagogy")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<perceive\\>|\\<perceived\\>)",
replacement="perceive")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<periods\\>)", replacement="period")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<personally\\>)", replacement="personal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<perspectives\\>)", replacement="perspective")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<phase1\\>|\\<phase2\\>|\\<phase3\\>|\\<phases\\>)",
replacement="phase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<phenomena\\>)", replacement="phenomenon")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<photography\\>)", replacement="photo")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<phrased\\>|\\<phrases\\>)", replacement="phrase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<physically\\>)", replacement="physical")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pictures\\>)", replacement="picture")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<place\\>|\\<placed\\>|\\<places\\>)",
replacement="place")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<plans\\>|\\<planned\\>|\\<planning\\>)",
replacement="plan")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<plant\\>|\\<plants\\>)", replacement="plant")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<playbased\\>|\\<plays\\>)", replacement="play")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pointed\\>|\\<points\\>)", replacement="point")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<posed\\>)", replacement="pose")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<powerfully\\>)", replacement="powerful")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<practiced\\>|\\<practices\\>|\\<practicum\\>)",
replacement="practice")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<predicted\\>|\\<predicting\\>|\\<prediction\\>|\
\<predictions\\>)", replacement="predict")
#allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<prediction\\>|\\<predictions\\>)",
replacement="predict")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<preparation\\>|\\<prepared\\>|\\<preparing\\>)",
replacement="prepare")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<preprimarylevel\\>|\\<kindergarten\\>)",
replacement="kindergarten")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<preschool\\>|\\<preschoolers\\>|\\<preschoolers'\\>|\
\<kindergartner\\>)", replacement="kindergartener")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<present\\>|\\<presented\\>|\\<presenting\\>|\
\<presents\\>|\\<presentation\\>)", replacement="present") #
different meanings possible?
```

```
#allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<primarily\\>|\\<firsthand\\>|\\<first\\>)",
replacement="prime")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<principles\\>)", replacement="principle")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<problems\\>)", replacement="problem")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<problembased\\>)", replacement="problemsolving")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<procedures\\>|\\<procedural\\>)",
replacement="procedure")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<process-ask\\>|\\<processes\\>)",
replacement="process")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<production\\>|\\<productive\\>|\\<producing\\>|\
\<produce\\>|\\<products\\>)", replacement="product") #HMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<proficiency\\>|\\<proficient\\>)",
replacement="proficient")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<program\\>|\\<programme\\>)", replacement="program")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<progression\\>|\\<progressively\\>|\\<progressed\\>|\
\<progress\\>)", replacement="progression") #not as in learning
progression?
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<projectbased\\>|\\<projects\\>)",
replacement="project")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<promote\\>|\\<promotes\\>|\\<promotion\\>)",
replacement="promote")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<proposed\\>|\\<proposing\\>|\\<propos\\>)",
replacement="propose")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<provided\\>|\\<provides\\>|\\<providing\\>)",
replacement="provide")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<provocateurs\\>)", replacement="provocateur")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<putting\\>)", replacement="put")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<queries\\>)", replacement="query")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<questioning\\>|\\<questions\\>|\\<questioned\\>)",
replacement="question")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<raising\\>)", replacement="raise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ranging\\>)", replacement="range")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<reached\\>)", replacement="reach")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<realistic\\>|\\<reality\\>)", replacement="real")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<realworld\\>)", replacement="reallife")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<recognition\\>|\\<recognizing\\>|\\<recognize\\>)",
replacement="recognise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<recommendations\\>|\\<recommended\\>|\\<recommends\
\>)", replacement="recommend")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<reconstructing\\>)", replacement="reconstruct")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<recorded\\>|\\<recording\\>)", replacement="record")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<referring\\>|\\<refers\\>)", replacement="refer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<refined\\>|\\<refining\\>)", replacement="refine")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<reflecting\\>|\\<reflections\\>|\\<reflection\\>|\
\<reflects\\>|\\<reflected\\>)", replacement="reflect")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<regarding\\>|\\<regarded\\>)", replacement="regard")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<reinforced\\>|\\<reinforcement\\>|\\<reinforcing\
\>)", replacement="reinforce")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<relating\\>|\\<related\\>|\\<relates\\>)",
replacement="relate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<relationbased\\>)", replacement="relation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<relationship\\>|\\<relationships\\>|\\<relations\
\>)", replacement="relation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<relevant\\>)", replacement="relevance")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<relies\\>|\\<relying\\>)", replacement="rely")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<repeatedly\\>|\\<repeated\\>)", replacement="repeat")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<reported\\>|\\<reporting\\>)", replacement="report")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<representing\\>|\\<representations\\>)",
replacement="represent")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<representational\\>)", replacement="representation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<requires\\>|\\<requiring\\>|\\<requirement\\>|\
\<requisite\\>", replacement="require")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<researchers\\>|\\<researcher\\>)",
```

```
replacement="researcher") #HMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<researching\\>)", replacement="research") #HMMM

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<resources\\>)", replacement="resource")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<respected\\>)", replacement="respect")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<responds\\>|\\<response\\>)", replacement="respond")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<results\\>)", replacement="result")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<reviewed\\>|\\<reviewing\\>)", replacement="review")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<revising\\>)", replacement="revise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<roles\\>)", replacement="role")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<scaffolded\\>|\\<scaffolding\\>|\\<scaffolds\\>)",
replacement="scaffold")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<schools\\>)", replacement="school")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sciencerelated\\>|\\<sciences\\>|\\<scientific\\>|\
\<scientifically\\>)", replacement="science") #HMMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<scientists\\>)", replacement="scientist")
#allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<second\\>|\\<secondary\\>)", replacement=" ") #HMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<seeking\\>|\\<seeks\\>)", replacement="seek")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<seemed\\>|\\<seems\\>)", replacement="seem")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<selected\\>|\\<selecting\\>|\\<selectively\\>|\
\<selection\\>)", replacement="select")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sensemaking\\>)", replacement="sense")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sequencing\\>|\\<sequentially\\>|\\<sequential\\>)",
replacement="sequence")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<serves\\>|\\<serving\\>)", replacement="serve")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sessions\\>)", replacement="session")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sets\\>)", replacement="set")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<settings\\>)", replacement="setting")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<shaped\\>|\\<shaping\\>)", replacement="shape")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
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pattern = "(\\<shifts\\>|\\<shifting\\>)", replacement="shift")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<shows\\>|\\<showed\\>|\\<shown\\>|\\<showing\\>)",
replacement="show")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<similarities\\>|\\<similarly\\>)",
replacement="similar")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<simply\\>)", replacement="simple")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<simulated\\>|\\<simulations\\>|\\<simulate\\>)",
replacement="simulation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sinking\\>)", replacement="sink")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<situated\\>|\\<situating\\>)", replacement="situate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<situations\\>)", replacement="situation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<skills\\>)", replacement="skill")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<smaller\\>)", replacement="small")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<solely\\>)", replacement="sole")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<solutions\\>)", replacement="solution")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<solving\\>)", replacement="solve")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sources\\>)", replacement="source")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<specification\\>|\\<specified\\>|\\<specifying\\>)",
replacement="specify") #HMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stages\\>)", replacement="stage")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<started\\>|\\<starting\\>|\\<starts\\>)",
replacement="start")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<statement\\>|\\<statements\\>|\\<states\\>|\\<stated\
\>)", replacement="state")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<step1\\>|\\<step2\\>|\\<step3\\>|\\<step4\\>|\
\<steps\\>|\\<step\\>)", replacement="phase") #HMMMMM CHECK THIS
OUT!!
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stimulated\\>|\\<stimulating\\>|\\<stimuli\\>)",
replacement="stimulate") #HMMMM
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stories\\>)", replacement="story")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<strongly\\>)", replacement="strong")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<structural\\>|\\<structured\\>|\\<structures\\>|\
```

```
\<structuring\\>)", replacement="structure")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<studentcentered\\>|\\\<studentdirected\\>)",
replacement="studentcentred")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<students\\>)", replacement="student")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<studied\\>|\\\<studies\\>)", replacement="study")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<subjects\\>)", replacement="subject")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<subsequently\\>)", replacement="subsequent")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<successful\\>|\\\<successfully\\>)",
replacement="success")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<suggested\\>)", replacement="suggest")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<summarized\\>|\\\<summarizes\\>|\\\<summarizing\\>|\
\<summary\\>)", replacement="summarize")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<supported\\>|\\\<supporting\\>|\\\<supports\\>|\
\<supportive\\>)", replacement="support")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<surrounding\\>|\\\<surrounds\\>)",
replacement="surround")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<systematically\\>)", replacement="systematic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<taken\\>|\\\<takes\\>|\\\<taking\\>|\\\<took\\>)",
replacement="take")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<talked\\>|\\\<talking\\>)", replacement="talk")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<targeted\\>|\\\<targeting\\>|\\\<targets\\>)",
replacement="target")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<tasks\\>)", replacement="task")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<coteacher\\>|\\\<teacher's\\>|\\\<teachers\\>|\
\<teaching\\>)", replacement="teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<technological\\>|\\\<technologies\\>)",
replacement="technology")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<terms\\>|\\\<terminology\\>)", replacement="term")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<testing\\>|\\\<tested\\>|\\\<tests\\>)",
replacement="test")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<thoughts\\>)", replacement="thought")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<topics\\>|\\\<topical\\>)", replacement="topic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<tracked\\>|\\<tracking\\>)", replacement="track")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<transformations\\>)", replacement="transformation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<translated\\>|\\<translates\\>)",
replacement="translate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<type\\>|\\<types\\>)", replacement="type")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<typically\\>)", replacement="typical")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<understanding\\>|\\<understandings\\>|\\<understood\
\>)", replacement="understand")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<units\\>)", replacement="unit")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<universityschool\\>)", replacement="university")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<unlike\\>|\\<unlikely\\>)", replacement="unlike")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<used\\>|\\<uses\\>|\\<using\\>)", replacement="use")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<varieties\\>)", replacement="variety")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<verbalization\\>|\\<verbally\\>)",
replacement="verbal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<viewed\\>|\\<viewing\\>|\\<views\\>)",
replacement="view")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<way\\>|\\<ways\\>)", replacement="way")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<word\\>|\\<words\\>)", replacement="word")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<working\\>|\\<works\\>)", replacement="work")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<writing\\>|\\<writings\\>|\\<written\\>)",
replacement="write")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<yearold\\>|\\<years\\>)", replacement="year")

##Specific for empirical
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<abilities\\>)", replacement="ability")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<acorns\\>)", replacement="acorn")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<adaptation\\>|\\<adapted\\>)", replacement="adapt")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<adopted\\>|\\<adopts\\>)", replacement="adopt")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<advanced\\>)", replacement="complex")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<affecting\\>|\\<affects\\>)", replacement="affect")
```

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allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<affordances\\>|\\<affords\\>)", replacement="afford")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<amounts\\>)", replacement="amount")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<animals\\>)", replacement="animal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ants\\>)", replacement="ant")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<eating\\>|\\<eaten\\>|\\<ate\\>)", replacement="eat")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<approached\\>)", replacement="approach")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<areas\\>)", replacement="area")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<artistic\\>|\\<artworks\\>|\\<artwork\\>|\\<arts\
\>)", replacement="art")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<asked\\>)", replacement="ask")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<assessments\\>|\\<assessment\\>|\\<assessed\\>|\
\<assesses\\>)", replacement="assess")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<assistance\\>)", replacement="assist")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<assuming\\>|\\<assumed\\>)", replacement="assume")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<attributions\\>|\\<attributes\\>)",
replacement="attribute")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<bags\\>)", replacement="bag")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<bands\\>)", replacement="band")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<beans\\>)", replacement="bean")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<bears\\>)", replacement="bear")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<began\\>|\\<begun\\>)", replacement="begin")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<behaviours\\>|\\<behaviour\\>|\\<behave\\>)",
replacement="behavior")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<bigger\\>)", replacement="big")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<birds\\>)", replacement="bird")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<blocks\\>)", replacement="block")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<boards\\>)", replacement="board")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<boiling\\>|\\<boiled\\>)", replacement="boil")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

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pattern = "(\\<boxes\\>)", replacement="box")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<boys\\>)", replacement="boy")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<bringing\\>|\\<brought\\>)", replacement="bring")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<broken\\>|\\<broke\\>)", replacement="break")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<buckets\\>)", replacement="bucket")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<building\\>|\\<build\\>)", replacement="built")
#building not used as in 'house' but as the action of building
something
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<butterflies\\>)", replacement="butterfly")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<called\\>)", replacement="call")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<captured\\>)", replacement="capture")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<capitalized\\>)", replacement="capitalize")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<cartoonish\\>|\\<cartoonlike\\>|\\<cartoons\\>)",
replacement="cartoon")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<carvers\\>)", replacement="carver")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<cases\\>)", replacement="case")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<causal\\>)", replacement="cause")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<centers\\>)", replacement="center")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<checking\\>|\\<checked\\>)", replacement="check")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<chicks\\>)", replacement="chick")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<clarifications\\>)", replacement="clarification")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<clips\\>)", replacement="clip")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<cleaning\\>)", replacement="clean")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<closely\\>|\\<closeness\\>)", replacement="close")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<clouds\\>)", replacement="cloud")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<coding\\>|\\<codes\\>)", replacement="code")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<collaboration\\>|\\<collaborate\\>)",
replacement="collaborative") # Is this ok? \\<collective\\>|
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\\<collects\\\>)", replacement="collect")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<colouring\\\>|\\\<coloured\\\>|\\\<coloring\\\>|\\\<colour\
\>|\\\<colored\\\>|\\\<colors\\\>)", replacement="color") # Is this ok?
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<coming\\\>)", replacement="come")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<comments\\\>)", replacement="comment")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<communitys\\\>)", replacement="community")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<compared\\\>|\\\<compares\\\>)", replacement="compare")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<competencies\\\>)", replacement="competence")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<compressing\\\>|\\\<compressed\\\>)",
replacement="compress")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<computertablets\\\>)", replacement="computer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<containers\\\>)", replacement="container")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<contextualize\\\>|\\\<contextually\\\>|\\\<contextual\\\>|
\\\<contextsensitive\\\>)", replacement="contextual")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<continues\\\>)", replacement="continue")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<contrasting\\\>|\\\<contrasted\\\>)",
replacement="contrast")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<contributions\\\>)", replacement="contribute") #Ok?
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<controlled\\\>|\\\<controls\\\>)",
replacement="control")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<correspondence\\\>|\\\<corresponding\\\>)",
replacement="correspond")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<counting\\\>|\\\<counts\\\>)", replacement="count")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<countries\\\>|\\\<counts\\\>)", replacement="country")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<covering\\\>)", replacement="covered")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<cubes\\\>)", replacement="cube")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<culturally\\\>|\\\<cultural\\\>)",
replacement="culture")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<cups\\\>)", replacement="cup")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<cutouts\\\>)", replacement="cutout")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\\<debriefings\\\>)", replacement="debrief")
```

```r
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<demanding\\>)", replacement="demand")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<details\\>)", replacement="detail")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<dialogic\\>)", replacement="dialogue")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<differentiating\\>)", replacement="differentiate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<dinosaurs\\>)", replacement="dinosaur")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<discursive\\>)", replacement="discourse")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<distributed\\>|\\<distributing\\>)",
replacement="distribute")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<dispersal\\>)", replacement="disperse")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<displayed\\>)", replacement="display")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<document\\>)", replacement="documenting") #In this
corpus these two forms relate to children documenting
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<drinks\\>)", replacement="drink")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<driving\\>|\\<driven\\>)", replacement="drive")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<drew\\>)", replacement="draw")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<drops\\>)", replacement="drop")#as in pellet, not the
verb
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<dynamically\\>)", replacement="dynamic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<eagerness\\>|\\<eagerly\\>)", replacement="dynamic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<earths\\>|\\<earthlets\\>)", replacement="earth")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<eggs\\>)", replacement="egg")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<electrical\\>|\\<electricity\\>)",
replacement="electric")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<elements\\>)", replacement="element")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<elicitation\\>|\\<elicited\\>|\\<eliciting\\>)",
replacement="elicit")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ellie\\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<emerged\\>)", replacement="emerge")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<empirically\\>)", replacement="empirical")
```

```r
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<enabled\\>)", replacement="enable")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<enactments\\>|\\<act\\>)", replacement="enactment")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<encouraged\\>)", replacement="encourage")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ended\\>)", replacement="end")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<energy1\\>|\\<energy-a\\>)", replacement="energy")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<engagement\\>|\\<engaged\\>)", replacement="engage")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<enhanced\\>)", replacement="enhance")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<enquiry\\>)", replacement="inquiry")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<epistemology\\>)", replacement="epistemic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<essentially\\>)", replacement="essential")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<evaporation\\>)", replacement="evaporate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<events\\>)", replacement="event")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<examples\\>)", replacement="example")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<excerpts\\>)", replacement="excerpt")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<existence\\>|\\<existing\\>)", replacement="exist")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<feeders\\>)", replacement="feeder")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<filip\\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<filling\\>|\\<filled\\>)", replacement="fill")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<finds\\>)", replacement="find")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<finally\\>)", replacement="final")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<fingerprints\\>)", replacement="fingerprint")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<firstgrade\\>)", replacement="primary")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<flew\\>)", replacement="fly")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<flowers\\>)", replacement="flower")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<follows\\>)", replacement="follow")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<foods\\>)", replacement="food")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<forces\\>)", replacement="force")
```

```
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<format\\>)", replacement="form")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<fostered\\>)", replacement="foster")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<fourphase\\>)", replacement="four phase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<fivephase\\>)", replacement="five phase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<fourth\\>)", replacement="four")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<freely\\>)", replacement="free")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<frequencies\\>)", replacement="frequency")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<frequently\\>)", replacement="frequent")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<frida\\>)", replacement="student_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<functionality\\>)", replacement="function")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gamelike\\>|\\<games\\>)", replacement="game")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gardening\\>|\\<gardens\\>)", replacement="garden")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gathered\\>)", replacement="gather")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gauging\\>)", replacement="gauge")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gauging\\>)", replacement="gauge")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<generally\\>|\\<generalized\\>)",
replacement="general")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gets\\>)", replacement="get")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ginas\\>|\\<gina\\>)", replacement="example_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<girls\\>)", replacement="girl")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<got\\>)", replacement="get")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gravitational\\>)", replacement="gravity")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<group-togroup\\>|\\<smallgroup\\>|\\<wholegroup\\>)",
replacement="group")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<growing\\>|\\<growth\\>)", replacement="grow")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<habitats\\>)", replacement="habitat")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<hairy\\>)", replacement="hair")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<hands\\>)", replacement="hand")
```

```
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<hanna\\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<hannah\\>)", replacement="study_teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<happened\\>|\\<happening\\>|\\<happens\\>)",
replacement="happen")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<helped\\>|\\<helpful\\>|\\<helps\\>)",
replacement="help")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<holes\\>)", replacement="hole")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<homes\\>)", replacement="home")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<humans\\>)", replacement="human")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<illustration\\>|\\<illustrating\\>|\\<illustrates\
\>)", replacement="illustrate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<images\\>)", replacement="image")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<imagining\\>|\\<imaginary\\>)",
replacement="imagination")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<implementation\\>|\\<implemented\\>|\\<implementing\
\>|\\<implements\\>)", replacement="implement")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<improved\\>)", replacement="improve")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<impulses\\>)", replacement="impuls")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<inclines\\>)", replacement="incline")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<indoors\\>)", replacement="indoor")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ingredients\\>)", replacement="ingredient")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<intuitions\\>|\\<intuitively\\>)",
replacement="intuition")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<invited\\>|\\<invites\\>)", replacement="invite")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<invoked\\>)", replacement="invoke")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<issues\\>)", replacement="issue")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<items\\>)", replacement="item")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<journaling\\>|\\<journals\\>)",
replacement="journal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<keeping\\>|\\<kept\\>)", replacement="keep")
```

```r
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<largest\\>)", replacement="large")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<larvaes\\>)", replacement="larvae")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<layered\\>|\\<layers\\>)", replacement="layer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lead\\>|\\<led\\>)", replacement="leadership")
#The issue of leaves, leaving, and left. In excerpts, forms of the
verbe "to leave" where changed to "leaving". Leaves as in plant
material was not changed. Left as in non-rigt was unchanged.
#This changes were done directly in excerpts after reading the
context.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lets\\>)", replacement="let")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lifted\\>|\\<lifting\\>)", replacement="lift") #as in
the action of raising the potential energy of an object, not the
object of transportation
#light as in not heavy changed to non_heavy, light as physical
phenomenon kept, in light of -> in_light_of. Changed directely in
excerpts.
#like split into like (as likeness) and like (as an affective verb
-> like_affect)
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<likewise\\>)", replacement="like")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<limited\\>|\\<limits\\>)", replacement="limit")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<liquids\\>)", replacement="liquid")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<long\\>)", replacement="longterm")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lower\\>)", replacement="low")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mapped\\>)", replacement="map") #as in the action
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<maximally\\>)", replacement="maximal") #interesting
use...
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mealworms\\>)", replacement="mealworm")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mechanized\\>)", replacement="mechanical")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<meetings\\>)", replacement="meeting")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<melted\\>)", replacement="melting")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<metacognitive\\>)", replacement="metacognition")
#met as in had a meeting changed directly in excerpts.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<methodological\\>)", replacement="methodology")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<midjune\\>|\\<midjanuary\\>)",
```

```r
replacement="study_month")
#min as in minutes changes directly in excerpts. Always
[number]_minute, as in 20_minute
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mixed\\>)", replacement="mixing") #as in mixing
materials together.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<moles\\>)", replacement="mole") #as in the animal not
the number
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<motioning\\>)", replacement="motioned")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<motivate\\>|\\<motivating\\>)",
replacement="motivation")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mounted\\>)", replacement="mount") #as in mounting
something on a case
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<moved\\>|\\<movement\\>)", replacement="move")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<movies\\>)", replacement="movie")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<nearby\\>)", replacement="near")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<nests\\>)", replacement="nest")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<newtonian\\>)", replacement="newton")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<noises\\>)", replacement="noise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<noticed\\>)", replacement="notice")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<objectives\\>)", replacement="objective")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<obtained\\>)", replacement="obtain")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<occurred\\>|\\<occurs\\>)", replacement="occur")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<offered\\>)", replacement="offer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<older\\>|\\<olds\\>)", replacement="old")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<opened\\>)", replacement="open")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<operating\\>)", replacement="operate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<orders\\>)", replacement="order") #as in putting
things in order
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<organising\\>|\\<organised\\>|\\<organisational\\>|\
\<organize\\>)", replacement="organise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ornithologists\\>)", replacement="ornithologist")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
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```
pattern = "(\\<outdoors\\>)", replacement="outdoor")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<painter\\>|\\<painting\\>)", replacement="paint")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pennies\\>)", replacement="penny")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<performance\\>)", replacement="perform") #as in doing
somehting for others to see.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<petting\\>)", replacement="pet")
#"physical science" -> physics, physical as related to physics ->
"physics". All other instances of "physical" kept. Changes done
directly in excerpts.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pieces\\>)", replacement="piece")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pigs\\>)", replacement="pig")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<planting\\>)", replacement="plant")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pointing\\>)", replacement="point")
#pose as in pose questions changed to ask in excerpt.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<possibly\\>)", replacement="possible")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<potentially\\>)", replacement="potential")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<programs\\>)", replacement="program")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<promoted\\>|\\<promoting\\>)", replacement="promote")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<prompting\\>)", replacement="prompt")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<purposes\\>)", replacement="purpose")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pushing\\>)", replacement="push")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<puzzling\\>)", replacement="puzzle")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<rains\\>|\\<rainfall\\>)", replacement="rain")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<randomly\\>)", replacement="random")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ranged\\>)", replacement="range")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ratings\\>)", replacement="rating")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<reactions\\>)", replacement="react")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<readings\\>|\\<reading\\>|\\<read\\>)",
replacement="read")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<readily\\>)", replacement="ready")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
    pattern = "(\\<reasons\\>)", replacement="reason")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<recalling\\>)", replacement="recall")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<received\\>)", replacement="receiving")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<recognised\\>)", replacement="recognise")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<records\\>)", replacement="record")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<resonant\\\|\\<resonated\\>)", replacement="resonate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<respects\\>)", replacement="respect")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<responding\\\|\\<responded\\\|\\<responds\\>)",
replacement="respond")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<resulted\\>)", replacement="result")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<returning\\>)", replacement="return")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<revealed\\>)", replacement="reveal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<rocks\\>)", replacement="rock")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<routes\\>)", replacement="route")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<routines\\>)", replacement="routine")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<safely\\>)", replacement="safety")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<samples\\>)", replacement="sample")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sandy\\>)", replacement="sand")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<saw\\>|\\<seeing\\>|\\<seen\\>)", replacement="see")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<says\\>|\\<said\\>)", replacement="say")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<scales\\>)", replacement="scale")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<schooling\\>)", replacement="school")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<seasonal\\>|\\<seasons\\>)", replacement="season")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sections\\>)", replacement="section")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<seeds\\>)", replacement="seed")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<senses\\>)", replacement="sense")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<separated\\>|\\<seperately\\>)",
replacement="separate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<sequences\\>)", replacement="sequence")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sat\\>|\\<setting\\>)", replacement="set") #as in the
act of setting stuff up
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<shapes\\>)", replacement="shape")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sharable\\>|\\<sharing\\>|\\<shared\\>)",
replacement="share")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<shells\\>)", replacement="shell")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<significance\\>)", replacement="significant")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sixth\\>)", replacement="six")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<slowmations\\>)", replacement="slowmation")
#small groups and small group changed to smallgroup directly in
excerpts.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<smelling\\>|\\<smelly\\>)", replacement="smell")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<snails\\>)", replacement="snail")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<snowfall\\>)", replacement="snow")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<somethings\\>)", replacement="something")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<songs\\>)", replacement="song")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sorted\\>)", replacement="sort")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<spanned\\>)", replacement="spans")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<specifically\\>)", replacement="specific")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<speeding\\>)", replacement="speed")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<spilled\\>)", replacement="spill")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<splits\\>)", replacement="split")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<spontaneously\\>)", replacement="spontaneous")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<spots\\>)", replacement="spot")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<squeezed\\>)", replacement="squeeze")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<standardize\\>|\\<standards\\>)",
replacement="standard")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stereotypical\\>)", replacement="stereotype")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stopped\\>)", replacement="stop")
```

```r
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stored\\>)", replacement="store")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<strategies\\>|\\<strategic\\>)",
replacement="strategy")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<strengths\\>)", replacement="strength")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stretching\\>|\\<stretched\\>)",
replacement="stretch")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<striped\\>)", replacement="stripes")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<striving\\>)", replacement="strive")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<suitability\\>)", replacement="suitable")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<survive\\>)", replacement="survival")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<stretching\\>|\\<stretched\\>)",
replacement="stretch")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<symbolic\\>|\\<symbols\\>)", replacement="symbol")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<table2\\>|\\<table1\\>)", replacement="table")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<teams\\>)", replacement="team")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tells\\>)", replacement="tell")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<textbook\\>|\\<texts\\>)", replacement="text")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<things\\>)", replacement="thing")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<thinking\\>|\\<thinks\\>)", replacement="think")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tools\\>)", replacement="tool")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<totally\\>)", replacement="total")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<towards\\>)", replacement="toward")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<toys\\>)", replacement="toy")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tracing\\>)", replacement="trace")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tracks\\>)", replacement="track")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<training\\>)", replacement="train")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<transformed\\>)", replacement="transform")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<transitioning\\>|\\<transitioned\\>)",
replacement="transition")
```

```r
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<triggered\\>)", replacement="triggers")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<trying\\>)", replacement="try")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tubs\\>)", replacement="tub")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<turned\\>)", replacement="turn") #as in focused their
attention on, whereas "turns" relates to taking turns.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<twisting\\>|\\<twisted\\>)", replacement="twist") #as
in the action of turning something, not "with a twist".
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<underlying\\>)", replacement="underlie")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<utilizing\\>|\\<utilized\\>)", replacement="utilize")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<valuable\\>|\\<valuing\\>|\\<valued\\>|\\<values\
\>)", replacement="value") #hmmm..
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<variables\\>)", replacement="variable") #as in
concept of "a variable" parameter
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<vignettes\\>)", replacement="vignette")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<vocabularies\\>)", replacement="vocabulary")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<went\\>)", replacement="go")
#whats changed to what is
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<walked\\>|\\<walks\\>>|\\<walking\\>>)",
replacement="walk") # as in either "to walk" and "a walk".
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<wanted\\>)", replacement="want")
#wasnt changed to was not in excerpt
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<watching\\>)", replacement="watch")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<weeks\\>|\\<weekly\\>>)", replacement="week")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<watching\\>)", replacement="watch")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<wooden\\>)", replacement="wood")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<worked\\>)", replacement="work") #but not "workers"
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<worlds\\>)", replacement="world")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<younger\\>)", replacement="young")


#Spliting words. Since we removed hyphens, some words need to be
split.
```

```
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<subtopic\\>|\\<subtopics\\>)", replacement="sub
topic")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<threephase\\>)", replacement="three phase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<twophase\\>)", replacement="two phase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<threeweek\\>)", replacement="three week")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<videotaped\\>)", replacement="video taped")
#theres (as in there's) changed to "there is" directly in excerpts


#Specific names -> function in study
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<james\\>)", replacement="example_child")
#example_child is a fictional child used in instructional materials.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tom\\>)", replacement="example_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<john\\>)", replacement="example_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<gina\\>)", replacement="example_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tony\\>)", replacement="example_child")

allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lilly\\>)", replacement="example_animal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<thelmas\\>)", replacement="example_animal")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<jane\\>)", replacement="study_scienctist") #a
rolemodel for childreni n the study??
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<peter\\>)", replacement="study_scienctist")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<chris\\>)", replacement="study_scienctist")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<johannah\\>)", replacement="study_child") #a child
observed and analysed in the study
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lily\\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lucy\\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<markus\\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<simon\\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<susie\\>|\\<susies\\>|\\<susieastheball\\>|\\<susie3\
\>)", replacement="study_child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<cora\\>)", replacement="study_teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mrstreadwell\\>)", replacement="study_teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<mrscasey\\>)", replacement="study_teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<becky\\>)", replacement="study_teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<shane\\>)", replacement="study_teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<ppts\\>)", replacement="study_teacher")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pts\\>)", replacement="study_teacher")

#Changed Child: and other instances of named or specific children
that appear in studies to "study_child".
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<wouassammeeschtendran\\>)", replacement="non-english-
sentence")


##SYNONYMS
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<Theoretical\\>|\\<theories\\>|\\<theories\\>|\
\<theory\\>)", replacement="theory")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<certain\\>)", replacement="specific")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<elementary\\>)", replacement="primary")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<constitue element\\>)", replacement="phase")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<inquiry_based\\>|\\<inquirybased\\>|\\<inquiryframed\
\>|\\<inquiryoriented\\>)", replacement="ibse")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<directed\\>|\\<directing\\>|\\<direct\\>|\
\<instructed\\>|\\<instruct\\>|\\<steer\\>)",
replacement="instruct_guide")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<curiosity\\>|\\<interesting\\>|\\<interests\\>|\
\<interests\\>|\\<interested\\>)", replacement="interest")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<instructors\\>)", replacement="educators")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<teacher trainer\\>|\\<pilot centre trainer\\>|\\<the
trainer\\>)", replacement="teacher_trainer")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<kids\\>)", replacement="child")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<likely\\>|\\<probably\\>)", replacement="probable")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<lives\\>|\\<live\\>)", replacement="live_habitat")
#lives as in plural of life -> life.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
```

```
pattern = "(\\<pretence\\>|\\<pretend\\>|\\<pretending\\>|\
\<makebelieve\\>|\\<played\\>|\\<playing\\>)", replacement="play")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<onus\\>|\\<responsibilities\\>)",
replacement="responsibility")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<papers\\>)", replacement="article") #papers in plural
only used as articles in excerpts.
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<photographing\\>|\\<photographer\\>|\\<photographed\
\>|\\<photos\\>|\\<photo\\>|\\<pictogram\\>|\\<pictures\\>)",
replacement="picture")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<playdough\\>)", replacement="playdoh")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<prints\\>)", replacement="print")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<previously\\>|\\<prior\\>)", replacement="previous")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<immediately\\|\\<promptly\\>>)",
replacement="immediate")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<pupils\\)", replacement="pupil")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<reasoning\\>)", replacement="thinking")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<schoolyard\\>)", replacement="playground")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<sciencey\\>)", replacement="sciencelike")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<book\\>)", replacement="text")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<at times\\>|\\<at other times\\>>)",
replacement="sometimes")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<track\\>|\\<trace\\>>)", replacement="track_trace")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tubs\\>|\\<bathtub\\>>)", replacement="tub")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<tv\\>)", replacement="television")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<vs\\>)", replacement="versus")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<secondgrade\\>)", replacement="2ndgrade")
allEmpirical <- tm_map(allEmpirical, content_transformer(gsub),
pattern = "(\\<first graders\\>)", replacement="1stgrade")


#These words either provide no meaning or are used so many times
that they obscure relevant signals.

wordstoremove<-
c(stopwords("english"),"can","also","although","may","maybe","moreov
```

```
er","mostly","onto","per se", "really","therefore","though","thus",

"xl011","xl021","xl051","xl071","xn011","xn031","xn051","xn071","xq0
11","xq031","xq041","xq051","xs021","xs091","xs111","xs121",
                "2013appendixfp10","20132014","1b","p234","p141")




#Cleaning up..
#allFilesx <- tm_map(allFilesx, removeWords, c("endoffile"))
allEmpirical<-tm_map(allEmpirical,stripWhitespace)


#Function to help make linguistic networks
#It returns an list of edges in a directed network
myWordNetwork <- function (txt,j.words) {
  # Clean data
  #remove capitalization
  #corpus.temp          <- tm_map(corpus, tolower)
  #Remove punctuations and other unnecessary things
  #corpus.removed.punc  <- tm_map(corpus.temp, removePunctuation)
  #Remove numbers
  #corpus.removed.numb  <- tm_map(corpus.removed.punc,
removeNumbers)
  #Remove Whitespaces
  #corpus.removed.white <- tm_map(corpus.removed.punc,
stripWhitespace)
  #corpus               <- Corpus(DataframeSource(data.frame(data)))

  #prepare for stemming (language is english, but TM has a package
for other
  #languages)
  #corpus.temp <- corpus.removed.white
  #corpus.copy  <- corpus.temp
  #corpus.temp  <- tm_map(corpus.temp, stemDocument, language =
language)
  #corpus.final <- tm_map(corpus.temp, stemCompletion,
  #                       dictionary = corpus.copy)
  #corpus.final<-corpus.temp
  #Prepare to remove "stopwords" such as "A", "The", e.t.c.
  # keep "declarative words"
  #my.stopwords <- stopwords("english")
  #my.stopwords <- my.stopwords[!(my.stopwords %in% j.words)]
  #Remove stopwrods
  #corpus.crop <-
tm_map(corpus.removed.white,removeWords,c(my.stopwords))

  # Create edge list for export
  edge.list <-strsplit(as.matrix(txt), split = " ")[[1]]
  #Remove unnecessary
  #edge.list<-as.matrix(corpus.final[[1]])
  #edge.list <- edge.list[edge.list!=""]
  #edge.list<-strsplit(edge.list,split=" ")
```

```
  # index of "declarative words" (the -1 is because we're removing
first and
  # last word to make it into a word-network
  node.num <- length(edge.list[!(edge.list %in% j.words)]) - 1
  #Create matrix to be exported
  export.edge.list <- array("",dim=c(node.num,2))
  #Set column names as per Gephi requirements
  #colnames(export.edge.list) <- c("Source","Target","Label")
  # Put source word except the "joining words into the matrix to be
exported
  export.edge.list[,1] <- edge.list[!(edge.list %in% j.words)][-
length(edge.list[!(edge.list %in% j.words)])]
  # put the target word except the "joining words into the matrix to
be exported
  export.edge.list[,2] <- edge.list[!(edge.list %in% j.words)][-1]

  #Go through the joining words and put them in
  # for(i in j.words) {
  #   for (j in which(edge.list %in% i)) {
  #   export.edge.list[j - sum(!which(edge.list %in% j.words) > j),
3] <- i
  # }
  #}
  return(export.edge.list)
}


#Applying the function to each excerpt
edgelistsEmpirical<-
lapply(allEmpirical,myWordNetwork,j.words=wordstoremove)
graphsEmpirical<-list()
for (i in 1:35){
  graphsEmpirical[[i]]<-graph.edgelist(edgelists[[i]],directed=T)
}

#Bind all excerpts together to a single edge list
allEdgeEmpirical<-
rbind(edgelistsEmpirical[[1]],edgelistsEmpirical[[2]],edgelistsEmpir
ical[[3]],edgelistsEmpirical[[4]],edgelistsEmpirical[[5]],edgelistsE
mpirical[[6]],edgelistsEmpirical[[7]],edgelistsEmpirical[[8]],edgeli
stsEmpirical[[9]],edgelistsEmpirical[[10]],

edgelistsEmpirical[[11]],edgelistsEmpirical[[12]],edgelistsEmpirical
[[13]],edgelistsEmpirical[[14]],edgelistsEmpirical[[15]],edgelistsEm
pirical[[16]],edgelistsEmpirical[[17]],edgelistsEmpirical[[18]],edge
listsEmpirical[[19]],edgelistsEmpirical[[20]],

edgelistsEmpirical[[21]],edgelistsEmpirical[[22]],edgelistsEmpirical
[[23]],edgelistsEmpirical[[24]],edgelistsEmpirical[[25]],edgelistsEm
pirical[[26]],edgelistsEmpirical[[27]],edgelistsEmpirical[[28]],edge
listsEmpirical[[29]],edgelistsEmpirical[[30]],

edgelistsEmpirical[[31]],edgelistsEmpirical[[32]],edgelistsEmpirical
```

```
[[33]],edgelistsEmpirical[[34]],edgelistsEmpirical[[35]])

#make separate networks for each article. Not used in manuscript
articlesE<-lapply(edgelistsEmpirical,graph.edgelist,directed=T)
for (i in 1:length(articlesE)){
  E(articlesE[[i]])$weight<-1
  articlesE[[i]]<-simplify(articlesE[[i]],edge.attr.comb="sum")
  articlesE[[i]]<-
delete.vertices(articlesE[[i]],which(V(articlesE[[i]])
$name=="break"))
}

article01E<-graph.edgelist(edgelistsEmpirical[[1]],directed=T)
article02E<-graph.edgelist(edgelistsEmpirical[[2]],directed=T)
article03E<-graph.edgelist(edgelistsEmpirical[[3]],directed=T)
article04E<-graph.edgelist(edgelistsEmpirical[[4]],directed=T)
article05E<-graph.edgelist(edgelistsEmpirical[[5]],directed=T)
article06E<-graph.edgelist(edgelistsEmpirical[[6]],directed=T)
article07E<-graph.edgelist(edgelistsEmpirical[[7]],directed=T)
article08E<-graph.edgelist(edgelistsEmpirical[[8]],directed=T)
article09E<-graph.edgelist(edgelistsEmpirical[[9]],directed=T)
article10E<-graph.edgelist(edgelistsEmpirical[[10]],directed=T)
article11E<-graph.edgelist(edgelistsEmpirical[[11]],directed=T)
article12E<-graph.edgelist(edgelistsEmpirical[[12]],directed=T)
article13E<-graph.edgelist(edgelistsEmpirical[[13]],directed=T)
article14E<-graph.edgelist(edgelistsEmpirical[[14]],directed=T)
article15E<-graph.edgelist(edgelistsEmpirical[[15]],directed=T)
article16E<-graph.edgelist(edgelistsEmpirical[[16]],directed=T)
article17E<-graph.edgelist(edgelistsEmpirical[[17]],directed=T)
article18E<-graph.edgelist(edgelistsEmpirical[[18]],directed=T)
article19E<-graph.edgelist(edgelistsEmpirical[[19]],directed=T)
article20E<-graph.edgelist(edgelistsEmpirical[[20]],directed=T)
article21E<-graph.edgelist(edgelistsEmpirical[[21]],directed=T)
article22E<-graph.edgelist(edgelistsEmpirical[[22]],directed=T)
article23E<-graph.edgelist(edgelistsEmpirical[[23]],directed=T)
article24E<-graph.edgelist(edgelistsEmpirical[[24]],directed=T)
article25E<-graph.edgelist(edgelistsEmpirical[[25]],directed=T)
article26E<-graph.edgelist(edgelistsEmpirical[[26]],directed=T)
article27E<-graph.edgelist(edgelistsEmpirical[[27]],directed=T)
article28E<-graph.edgelist(edgelistsEmpirical[[28]],directed=T)
article29E<-graph.edgelist(edgelistsEmpirical[[29]],directed=T)
article30E<-graph.edgelist(edgelistsEmpirical[[30]],directed=T)
article31E<-graph.edgelist(edgelistsEmpirical[[31]],directed=T)
article32E<-graph.edgelist(edgelistsEmpirical[[32]],directed=T)
article33E<-graph.edgelist(edgelistsEmpirical[[33]],directed=T)
article34E<-graph.edgelist(edgelistsEmpirical[[34]],directed=T)
article35E<-graph.edgelist(edgelistsEmpirical[[35]],directed=T)

#make combined network
allNetEmpirical<-graph.edgelist(allEdgeEmpirical,directed=T)
E(allNetEmpirical)$weight<-1
allNetEmpirical<-delete.vertices(allNetEmpirical,v =
which(V(allNetEmpirical)$name=="break"))
allNetEmpirical<-
```

```
simplify(allNetEmpirical,remove.multiple=T,edge.attr.comb=list(weigh
t="sum"))
prE<-page.rank(allNetEmpirical)
V(allNetEmpirical)$pr<-prE$vector
sort(prE$vector,decreasing = T)[1:10]
fgE<-fastgreedy.community(as.undirected(allNetEmpirical))
write.csv(V(allNetEmpirical)$name,"listNodesEmpirical.csv")
```

```r
#run createTheoreticalNetworks.R and createEmpiricalNetworks.r first
#you should have an object called: allNetTheoretical and an object
called allNetEmpirical
#These are graph objects, weighted and directed
#The script creates maps and graphs and write them to graphml files.
These may be viewed in software Gephi.

##create bacbone versions of the graphs
source("R_scripts/backboneExtraction.r")
V(allNetEmpirical)$id<-V(allNetEmpirical)$name
V(allNetTheoretical)$id<-V(allNetTheoretical)$name
freq<-strength(allNetTheoretical,mode = "all")

theoreticalBB<-backboneNetwork(allNetTheoretical,evalFunc = 1, alpha
= 0.001)
V(theoreticalBB)$freq<-strength(allNetTheoretical,mode = "all")
empiricalBB<-backboneNetwork(allNetEmpirical,evalFunc = 1, alpha =
0.001)
V(empiricalBB)$freq<-strength(allNetEmpirical,mode = "all")

####Create a map based on fast-greedy algorithm
fgT<-fastgreedy.community(as.undirected(allNetTheoretical))
fgTBB<-fastgreedy.community(as.undirected(theoreticalBB))
optimal.community(theoreticalBB)
fgE<-fastgreedy.community(as.undirected(allNetEmpirical))
fgEBB<-fastgreedy.community(as.undirected(empiricalBB))

V(theoreticalBB)$fastgreedy<-fgTBB$membership
write.graph(theoreticalBB,"theoretical28052020.graphml",format="grap
hml")

V(empiricalBB)$fastgreedy<-fgEBB$membership
write.graph(empiricalBB,"empirical28052020.graphml",format="graphml"
)

##MAP CREATION
Wij<-function(j,mem,g){
  M<-length(unique(mem))
  m<-which(mem==j)
  dfm<-data.frame()

  for(i in 1:length(m)){
    x<-incident(g,m[i],mode="in")
    a<-ends(g, x,names=F)

    b<-get.edge.attribute(g,name="weight",x)
    c<-mem[a[,1]] #HMMM:..
    dfm<-rbind(dfm,data.frame(a,weight=b,module=c))

  }


  V<-vector()
  for(l in 1:M){
```

```
    V[l]<-sum(dfm$weight[dfm$module==l])
  }

  return(V)

}
makemap<-function(mem,g){
  M<-length(unique(mem))
W<-matrix(NA,ncol=M,nrow=M)
for(j in 1:length(unique(mem))){
  W[,j]<-Wij(j,mem,g) #was W[j,i] - trying out this on June 21st
2020
}
##naming modules based on 10 largest pageranks
pr<-page.rank(g)
modulenames<-vector()
for(k in 1:length(unique(mem))){
  modulenames[k]<-paste(c(k,names(sort(pr$vector[mem==k],decreasing
= T)[1:3])),collapse = ";")
}

internalLinks<-diag(W)
n_words<-as.vector(table(mem))
h<-graph.adjacency(W,mode=c("directed"),weighted = T,diag = F)
V(h)$name<-modulenames #names of the 10 higest pagerank words in
them module
V(h)$id<-modulenames
V(h)$n_words<-n_words #how many words in module
V(h)$internallinks<-internalLinks #how many internal links are in
each module

return(h)
}

mapTheoretical<-makemap(fgTBB$membership,theoreticalBB)
mapEmpirical<-makemap(fgEBB$membership,empiricalBB)


mapTBB<-backboneNetwork(mapTheoretical,0.005,1)
V(mapTBB)$n_words<-V(mapTheoretical)$n_words
mapTBB<-decompose.graph(mapTBB)[[1]]
fgMTBB<-fastgreedy.community(as.undirected(mapTBB))
V(mapTBB)$fastgreedy<-fgMTBB$membership
write.graph(mapTBB,"mapTBB21062020.graphml",format="graphml")

mapEBB<-backboneNetwork(mapEmpirical,0.005,1)
V(mapEBB)$n_words<-V(mapEmpirical)$n_words
mapEBB<-decompose.graph(mapEBB)[[1]]
fgMEBB<-fastgreedy.community(as.undirected(mapEBB))
V(mapEBB)$fastgreedy<-fgMEBB$membership
write.graph(mapEBB,"mapEBB28052020.graphml",format="graphml")

mapTheoreticalrem<-delete.vertices(mapTheoretical,1)
mapTremBB<-backboneNetwork(mapTheoreticalrem,0.005,1)
```

```
V(mapTremBB)$n_words<-V(mapTheoreticalrem)$n_words
mapTremBB<-decompose.graph(mapTremBB)[[1]]
fgMTremBB<-fastgreedy.community(as.undirected(mapTremBB))
V(mapTremBB)$fastgreedy<-fgMTremBB$membership
write.graph(mapTremBB,"mapTBBrem21062020.graphml",format="graphml")

mapEmpiricalrem<-delete.vertices(mapEmpirical,13)
mapEremBB<-backboneNetwork(mapEmpiricalrem,0.005,1)
V(mapEremBB)$n_words<-V(mapEmpiricalrem)$n_words
mapEremBB<-decompose.graph(mapEremBB)[[1]]
fgMEremBB<-fastgreedy.community(as.undirected(mapEremBB))
V(mapEremBB)$fastgreedy<-fgMEremBB$membership
write.graph(mapEremBB,"mapEBB13rem21062020.graphml",format="graphml"
)
```

```r
#This script creates a lingusitic network based on the theoretical
texts corpus
#It will write a comma separated variables file called
"listNodesTheoretical.csv" to the working directory
#The end product is allNetTheoretical to be used in furher analyses.

#First load necessary packages
library(tm)
library(igraph)
#Load the files we need
allTheoretical <-Corpus(DirSource("textsTheoretical",
encoding="UTF-8"), readerControl = list(language="lat"))
#Perform basic text-mining preprocessing
allTheoretical<-tm_map(allTheoretical,tolower)
allTheoretical<-tm_map(allTheoretical,removePunctuation)
allTheoretical<-tm_map(allTheoretical,stripWhitespace)

#Algorithmic rules
#These take the form of searching for and replacing a number of
words throughout the corpus
#The substituted words follow the =-sign after 'pattern' in each
line. These words are replaced with 'replacement'.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<accompanies\\>|\\<accompanying\\>)", replacement =
"accompanied")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "accordingly", replacement = "according")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<achieve2013\\>|\\<achieving\\>)", replacement =
"achieve")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<acknowledged\\>|\\<acknowledges\\>)", replacement =
"acknowledge")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<acquisition\\>|\\<acquiring\\>|\\<acquired\\>)",
replacement = "acquire")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<acting\\>|\\<acted\\>|\\<acts\\>)", replacement =
"act")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "actions", replacement = "action")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "actively", replacement = "active")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "activities", replacement = "activity")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<actuality\\>|\\<actually\\>)", replacement =
"actual")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "adaptively", replacement = "adaptable")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<additionally\\>|\\<additional\\>|\\<addition\\>|\
\<adding\\>|\\<added\\>)", replacement = "add")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<addressing\\>|\\<addressed\\>)", replacement =
"address")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "adults", replacement = "adult")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "advancing", replacement = "advance")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "aesthetically", replacement = "aesthetic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "ages", replacement = "age")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "agreement", replacement = "agree")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<aimed\\>|\\<aims\\>)", replacement = "aim")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<allowing\\>|\\<allowed\\>|\\<allows\\>)", replacement
= "allow")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "alongside", replacement = "along")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<analysis\\>|\\<analyses\\>|\\<analysed\\>|\
\<analytical\\>|\\<analytic\\>|\\<analyze\\>|\\<analyzing\\>)",
replacement = "analyse")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<answered\\>|\\<answering\\>|\\<answers\\>)",
replacement = "answer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "appearance", replacement = "appear")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "applications", replacement = "application")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<applicable\\>|\\<applying\\>|\\<applied\\>)",
replacement = "apply")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "approaches", replacement = "approach")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<appropriately\\>|\\<appropriateness\\>)", replacement
= "appropriate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<argumentation\\>|\\<arguments\\>|\\<argument\\>|\
\<argues\\>|\\<argued\\>)", replacement = "argue")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<arisen\\>|\\<arises\\>|\\<arising\\>)",
replacement="arise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<articulated\\>|\\<articulating\
\>)",replacement="articulate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "artifacts", replacement = "artifact")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<asking\\>|\\<asks\\>)",  replacement = "ask")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "aspects", replacement = "aspect")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<assigned\\>|\\<assigning\\>)", replacement =
"assign")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<associating\\>|\\<associated\\>|\\<association\
\>)",replacement = "associate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<assumption\\>|\\<assumptions\\>)",replacement =
"assume")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "attributed", replacement="attribute")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<became\\>|\\<becomes\\>|\\<becoming\\>)",
replacement="become")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<beginning\\>|\\<begins\\>)", replacement="begin")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "behaviors", replacement="behavior")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "attributed", replacement="attribute")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<beliefs\\>|\\<believed\\>)", replacement="belief")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "books", replacement="book")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "broader", replacement="broad")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<built\\>|\\<builds\\>)", replacement="build")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "capabilities", replacement="capability")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<carrying\\>|\\<carried\\>|\\<carries\\>)",
replacement="carry")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<categorization\\>|\\<classification\\>|\
\<categorizing\\>|\\<categorized\\>|\\<categorize\\>|\\<classified\
\>|\\<categories\\>|\\<classify\\>|\\<category\\>)",
replacement="category_classify")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<centered\\>|\\<centred\\>|\\<centre\\>)",
replacement="center")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "centrality", replacement="central")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<challenging\\>|\\<challenged\\>|\\<challenges\\>)",
replacement="challenge")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "changes\\>|\\<changed", replacement="change")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "characteristics", replacement="characteristic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<childs\\>|\\<child's\\>|\\<children\\>|\\<children's\
\>|\\<childrens\\>)", replacement="child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<choices\\>|\\<choosing\\>|\\<choose\\>|\\<chosen\\>|\
```

```
\<chose\\>)", replacement="choice")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<claimed\\>|\\\<claims\\>)", replacement="claim")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "classes", replacement="class")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "classrooms", replacement="classroom")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<coconstructing\\>|\\\<coconstructors\\>|\
\<coconstruction\\>)", replacement="coconstruct")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "cognitively", replacement="cognitive")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<collaborating\\>|\\\<collaborations\\>|\
\<collaboration\\>|\\\<collaboratively\\>|\\\<collaborative\\>|\
\<collaborative\\>|\\\<collaborators\\>|\\\<collaborate\\>)",
replacement="collaborate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<collecting\\>|\\\<collection\\>|\\\<collected\\>)",
replacement="collect") #\\>|\\\<collective ??
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<combination\\>|\\\<combining\\>|\\\<combined\\>)",
replacement="combine")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "comes", replacement="come")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<communicate\\>|\\\<communicating\\>|\\\<communication\
\>|\\\<communicative\\>|\\\<communicators\\>)",
replacement="communicate") #\\>|\\\<communities ??
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<communitybased\\>|\\\<communities\\>)",
replacement="community")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "comparison", replacement="compare")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "completing\\>|\\\<completion", replacement="complete")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<complexities\\>|\\\<complexity\\>)",
replacement="complexity")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "components", replacement="component")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<comprised\\>|\\\<comprises\\>)",
replacement="comprise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "computers", replacement="computer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<conceptualization\\>|\\\<conceptualizing\\>|\
\<conceptualized\\>|\\\<conceptually\\>|\\\<conceptualize\\>|\
\<conceptions\\>|\\\<conception\\>|\\\<conceptual\\>|\\\<concepts\\>)",
replacement="concept")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<concerning\\>|\\\<concerned\\>|\\\<concerns\\>)",
replacement="concern")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<concluding\\>|\\<conclusions\\>|\\<concluded\\>|\
\<conclude\\>)", replacement="conclusion")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<conducting\\>|\\<conducted\\>)",
replacement="conduct")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<confirmation\\>|\\<confirmed\\>)",
replacement="confirm")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "conflicts", replacement="conflict")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "conjectures", replacement="conjecture")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<connections\\>|\\<connection\\>|\\<connected\\>|\
\<connects\\>)", replacement="connect")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<consideration\\>|\\<considered\\>|\\<considers\\>)",
replacement="consider")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<consistently\\>|\\<consistency\\>)",
replacement="consistent")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<consists\\>|\\<consisted\\>|\\<consisting\\>)",
replacement="consist")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<constituted\\>|\\<constitutes\\>|\\<constituent\\>)",
replacement="constitute")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<constructing\\>|\\<constructive\\>|\\<construction\
\>|\\<constructed\\>|\\<constructs\\>)", replacement="construct")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "constructivist", replacement="constructivism")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<contexts'\\>|\\<contexts\\>|\\<context'\\>)",
replacement="context")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<contextsensitive'\\>|\\<contextualized\\>)",
replacement="contextual")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<continuously\\>|\\<continually\\>|\\<continuing\\>|\
\<continued\\>)", replacement="continue")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<conversational\\>|\\<conversations\\>)",
replacement="conversation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "correctly", replacement="correct")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<creating\\>|\\<created\\>|\\<creates\\>)",
replacement="create")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "creativity", replacement="creative")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "criteria", replacement="criterion")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "critically", replacement="critical")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<curricula\\>|\\<curricular\\>)",
replacement="curriculum")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<cyclical\\>|\\<cyclic\\>)", replacement="cycle")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "dealing", replacement="deal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "debates", replacement="debate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<decisionmaking\\>|\\<decisions\\>|\\<deciding\\>|\
\<decided\\>)", replacement="decision")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<deepened\\>|\\<deepening\\>|\\<deeper\\>|\\<deeply\
\>|\\<deepen\\>)", replacement="deep")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<definitions\\>|\\<defining\\>|\\<defined\\>)",
replacement="define") #ok?
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "degrees", replacement="degree")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<demonstration\\>|\\<demonstrated\\>|\\<demonstrating\
\>|\\<demonstrates\\>)", replacement="demonstrate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<depending\\>|\\<dependence\\>|\\<dependent\\>|\
\<depends\\>)", replacement="depend")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<depiction\\>|\\<depicts\\>)", replacement="depict")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<descriptions\\>|\\<descriptively\\>|\\<description\
\>|\\<describing\\>|\\<described\\>|\\<describes\\>|\\<describe\
\>)", replacement="describe_ption")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<designing\\>|\\<designed\\>)", replacement="design")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "detailed", replacement="detail")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<detection\\>|\\<detecting\\>)", replacement="detect")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "determinate", replacement="determine")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<developmentally\\>|\\<developmental\\>|\
\<development\\>|\\<developing\\>|\\<developed\\>|\\<develops\\>)",
replacement="develop")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<johndewey\\>|\\<dewey1991p108\\>|\\<dewey1956pp47-48\
\>|\\<dewey1910\\>|\\<deweys\\>)", replacement="dewey")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<difference\\>|\\<differences\\>|\\<differ\\>)",
replacement="different")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<difficulty\\>|\\<dificult\\>)",
replacement="difficult")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<dimensions\\>)", replacement="dimension")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<discipline\\>|\\<disciplines\\>)",
replacement="discipline")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<discoveries\\>|\\<discovering\\>|\\<discovery\\>)",
replacement="discover")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<discussed\\>|\\<discussing\\>|\\<discussions\\>|\
\<discussion\\>)", replacement="discuss")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<display\\>|\\<displaying\\>)", replacement="display")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<distinction\\>|\\<distinctions\\>)",
replacement="distinction")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<distinguish\\>|\\<distinguished\\>)",
replacement="distinguish")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<domain\\>|\\<domains\\>|\\<domainspecific\\>)",
replacement="domain")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<drawings\\>|\\<drawing\\>|\\<drawn\\>|\\<draws\\>)",
replacement="draw")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<earlier\\>|\\<early\\>)", replacement="early")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<easier\\>|\\<easily\\>)", replacement="easy")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<educated\\>|\\<educational\\>|\\<education\\>|\
\<educative\\>)", replacement="education")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<effectively\\>|\\<effectiveness\\>|\\<effective\\>|\
\<effected\\>|\\<effects\\>)", replacement="effect")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<elaborated\\>|\\<elaborating\\>|\\<elaboration\\>)",
replacement="elaborate")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<embedded\\>|\\<embedding\\>|\\<embeds\\>)",
replacement="embed")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<emergent\\>|\\<emerges\\>|\\<emerging\\>)",
replacement="emerge")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<emphasise\\>|\\<emphasized\\>|\\<emphasizes\\>|\
\<emphasizing\\>|\\<emphasis\\>)", replacement="emphasize")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<employed\\>|\\<employing\\>)", replacement="employ")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<enables\\>|\\<enabling\\>)", replacement="enable")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<encouraged encourages\\>|\\<encouraging\\>)",
replacement="encourage")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<engaged engagement\\>|\\<engages\\>|\\<engaging\\>)",
replacement="engage")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "ends", replacement="end")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<enhancements\\>|\\<enhancing\\>)",
replacement="enhance")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<entities\\>)", replacement="entity")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<environments\\>|\\<environments\\>)",
replacement="environment")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<epistemologically\\>|\\<epistemological\\>)",
replacement="epistemic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<established\\>|\\<establishing\\>)",
replacement="establish")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<evaluated\\>|\\<evaluating\\>|\\<evaluations\\>|\
\<evaluation\\>)", replacement="evaluate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "eshachfried2005p327", replacement="eshachfried2005")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<examined\\>|\\<examines\\>|\\<examining\\>)",
replacement="examine")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<expansion\\>)", replacement="expand")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<experiences\\>)", replacement="experience") #\
\<experiential\\>|
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<experimental\\>|\\<experimentation\\>|\
\<experimenting\\>|\\<experimented\\>|\\<experiments\\>)",
replacement="experiment")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<explained\\>|\\<explaining\\>|\\<explains\\>)",
replacement="explain")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<explanations\\>|\\<explanatory\\>)",
replacement="explanation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<explicitly\\>)", replacement="explicit")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<explorations\\>|\\<exploration\\>|\\<exploratory\\>|\
\<explored\\>|\\<exploring\\>|\\<explores\\>)",
replacement="explore")
```

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allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<expressed\\>|\\<expressing\\>|\\<expression\\>)",
replacement="express")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<extended\\>|\\<extending\\>|\\<extends\\>)",
replacement="extend")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<facilitated\\>|\\<facilitates\\>|\\<facilitating\\>|\
\<facilitators\\>|\\<facilitator\\>)", replacement="facilitate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<facts\\>|\\<factual\\>)", replacement="fact")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<familiar\\>|\\<family\\>)", replacement="family")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<features\\>)", replacement="feature")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<finding\\>|\\<findings\\>)", replacement="find")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<floating\\>)", replacement="float")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<foci\\>|\\<focused\\>|\\<focuses\\>|\\<focusing\\>)",
replacement="focus")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<followed\\>|\\<following\\>)", replacement="follow")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<forms\\>)", replacement="form")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<formally\\>)", replacement="formal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<formats\\>)", replacement="format")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<formulating\\>|\\<formulation\\>)",
replacement="formulate")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<framed\\>|\\<frames\\>)", replacement="frame")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<frameworks\\>)", replacement="framework")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<freedom\\>)", replacement="free")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<french2004p147\\>)", replacement="french2004")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<fully\\>)", replacement="full")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<functioning\\>|\\<functions\\>)",
replacement="function")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gained\\>|\\<gaining\\>)", replacement="gain")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gathering\\>)", replacement="gather")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<generalization\\>|\\<generalizing\\>)",
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```
replacement="general")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<generated\\>|\\<generates\\>|\\<generatingd\\>|\
\<generating\\>)", replacement="generate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<get\\>)", replacement="get")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gave\\>|\\<given\\>|\\<gives\\>|\\<giving\\>)",
replacement="give")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<goal-orientated\\>|\\<goals\\>|\\<goaloriented\\>)",
replacement="goal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<grades\\>)", replacement="grade")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<grain'\\>|\\<grained\\>)", replacement="grain")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<greater\\>|\\<greatly\\>)", replacement="great")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<grounds\\>)", replacement="grounded")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<grouped\\>|\\<groups\\>)", replacement="group")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<guidance\\>|\\<guided\\>|\\<guidelines\\>|\\<guides\
\>|\\<guiding\\>)", replacement="guide")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<higher\\>|\\<highly\\>)", replacement="high")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<hypotheses\\>|\\<hypothesizing\\>|\\<hypothesized\
\>)", replacement="hypothesis")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ideas\\>)", replacement="idea")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<identifiable\\>|\\<identification\\>|\\<identified\
\>|\\<identifying\\>|\\<identifies\\>)", replacement="identify")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<implies\\>)", replacement="imply")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<importance\\>)", replacement="important")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<included\\>|\\<includes\\>|\\<including\\>|\
\<inclusion\\>)", replacement="include")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<incorporates\\>|\\<incorporation\\>)",
replacement="incorporate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<increased\\>|\\<increases\\>|\\<increasing\\>|\
\<increasingly\\>)", replacement="increase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<independence\\>|\\<independently\\>)",
replacement="independent")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<indicated\\>|\\<indicates\\>)",
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```
replacement="indicate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<individual's\\>|\\<individuals\\>)",
replacement="individual")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<inferences\\>|\\<inference\\>|\\<inferring\\>)",
replacement="infer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<influenced\\>|\\<influential\\>)",
replacement="influence")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<informative\\>|\\<informed\\>)",
replacement="inform")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<initially\\>)", replacement="initial")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<initiating\\>)", replacement="initiate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<inquirer\\>|\\<inquiries\\>|\\<inquiring\\>|\
\<inquirybased\\>)", replacement="inquiry")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<inspired\\>|\\<inspiring\\>)", replacement="inspire")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<instances\\>)", replacement="instance")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<instructional\\>|\\<instructionally\\>|\
\<instructions\\>)", replacement="instruction")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<integrated\\>|\\<integrating\\>|\\<integration\\>)",
replacement="integrate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<intentionally\\>|\\<intentions\\>|\\<intented\\>)",
replacement="intent")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<interacting\\>|\\<interactions\\>|\\<interact\\>|\
\<interacted\\>)", replacement="interaction")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<interpretively\\>|\\<interpretations\\>|\
\<interpretation\\>|\\<interpreted\\>|\\<interpreting\\>|\
\<interprets\\>)", replacement="interpret")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<introduced\\>|\\<introduces\\>|\\<introducing\\>|\
\<introduction\\>)", replacement="introduce")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<investigating\\>|\\<investigations\\>|\
\<investigation\\>|\\<investigated\\>)", replacement="investigate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<involved\\>|\\<involves\\>|\\<involving\\>)",
replacement="involve")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<judging\\>|\\<judgments\\>)", replacement="judge")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<kindergarteners\\>|\\<kindergartners\\>)",
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                    replacement="kindergartener")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<kinds\\>)", replacement="kind")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<knew\\>|\\<knowing\\>|\\<known\\>|\\<knows\\>|\
\<knowledgeable\\>)", replacement="know") #but not knowledge,
because different connotation.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<labs\\>)", replacement="laboratory")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<larger\\>)", replacement="large")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<leading\\>|\\<leads\\>)", replacement="lead")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<learn\\>|\\<learned\\>|\\<learning\\>)",
replacement="learn")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<learners\\>|\\<learners'\\>)", replacement="learner")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<lesser\\>)", replacement="less")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<lessons\\>)", replacement="lesson")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<levels\\>)", replacement="level")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<listening\\>|\\<listens\\>)", replacement="listen")
#allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<living-nonliving\\>|\\<living\\>)", replacement=" ")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<locally\\>)", replacement="local")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<located\\>|\\<locations\\>)", replacement="location")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<logical\\>|\\<logically\\>)", replacement="logical")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<longer\\>)", replacement="longterm")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<looking\\>|\\<looked\\>)", replacement="look")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<losing\\>)", replacement="lose")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<major\\>|\\<majors\\>)", replacement="major") #HMMM
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<makes\\>|\\<making\\>)", replacement="make")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<manageable\\>)", replacement="manage")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<manifest\\>|\\<manifested\\>)",
replacement="manifest")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<manipulating\\>|\\<manipulate\\>)",
replacement="manipulation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<map\\>|\\<mapping\\>)", replacement="map")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<master\\>|\\<mastery\\>)", replacement="master")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<material\\>|\\<materials\\>)",
replacement="material")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<mathematically\\>|\\<mathematics\\>|\\<mathematic\\>|
\\<math\\>)", replacement="mathematical")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<meaning'\\>|\\<meaningful\\>|\\<meaningfully\\>|\
\<meanings\\>|\\<mean\\>)", replacement="meaning")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<measuring\\>|\\<measured\\>|\\<measurements\\>|\
\<measure\\>)", replacement="measurement")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<members\\>|\\<membership\\>)", replacement="member")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<mental\\>|\\<mentally\\>)", replacement="mental")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<method\\>|\\<methods\\>)", replacement="method")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<midwest\\>|\\<midwestern\\>)", replacement="midwest")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<model\\>|\\<modelbased\\>|\\<modeling\\>|\
\<modelling\\>|\\<models\\>)", replacement="model")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<modified\\>|\\<modify\\>|\\<modifying\\>)",
replacement="modify")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<moment\\>|\\<moments\\>)", replacement="moment")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<movements\\>|\\<moves\\>|\\<moving\\>)",
replacement="move")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<mutual\\>|\\<mutually\\>)", replacement="mutual")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<natural\\>|\\<naturally\\>)", replacement="natural")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<necessarily\\>)", replacement="necessary")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<needed\\>|\\<needs\\>)", replacement="need")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<newfound\\>)", replacement="new")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<normative\\>|\\<norms\\>)", replacement="norm")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<noted\\>|\\<notes\\>)", replacement="note")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<notions\\>)", replacement="notion")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<numbers\\>|\\<numeracy\\>|\\<numerical\\>)",
replacement="number") #HMMM
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<objects\\>|\\<objects'\\>)", replacement="object")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<observations\\\>|\\\obervational data\\\>)",
replacement="observation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<observed\\\>|\\\<observes\\\>|\\\<observing\\\>)",
replacement="observe")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<obtaining\\\>)", replacement="obtain")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<operates\\\>)", replacement="operate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<opportunities\\\>)", replacement="opportunity")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<organized\\\>|\\\<organizing\\\>)",
replacement="organize")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<orientated\\\>|\\\<orientation\\\>|\\\<oriented\\\>)",
replacement="orient")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<original\\\>|\\\<originally\\\>)",
replacement="original")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<others'\\\>)", replacement="others")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<outcomes\\\>)", replacement="outcome")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<overarching\\\>)", replacement="overall")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<participating\\\>|\\\<participation\\\>|\
\<participatory\\\>)", replacement="participate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<participants\\\>)", replacement="participant")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<particularly\\\>)", replacement="particular")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<partnerships\\\>|\\\<partnerships\\\>|\\\<partners\\\>)",
replacement="partner")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<paths\\\>|\\\<pathway\\\>)", replacement="path")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<patterns\\\>)", replacement="pattern")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<pedagogical\\\>|\\\<pedagogically\\\>)",
replacement="pedagogy")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<pedagogies\\\>|\\\<pedagogy\\\>)",
replacement="pedagogy")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<perceive\\\>|\\\<perceived\\\>)",
replacement="perceive")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<periods\\\>)", replacement="period")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<personally\\\>)", replacement="personal")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<perspectives\\>)", replacement="perspective")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<phase1\\>|\\<phase2\\>|\\<phase3\\>|\\<phases\\>)",
replacement="phase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<phenomena\\>)", replacement="phenomenon")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<photography\\>)", replacement="photo")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<phrased\\>|\\<phrases\\>)", replacement="phrase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<physically\\>)", replacement="physical")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<pictures\\>)", replacement="picture")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<place\\>|\\<placed\\>|\\<places\\>)",
replacement="place")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<plans\\>|\\<planned\\>|\\<planning\\>)",
replacement="plan")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<plant\\>|\\<plants\\>)", replacement="plant")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<playbased\\>|\\<plays\\>)", replacement="play")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<pointed\\>|\\<points\\>)", replacement="point")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<posed\\>)", replacement="pose")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<powerfully\\>)", replacement="powerful")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<practiced\\>|\\<practices\\>|\\<practicum\\>)",
replacement="practice")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<predicted\\>|\\<predicting\\>|\\<prediction\\>|\
\<predictions\\>)", replacement="predict")
#allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<prediction\\>|\\<predictions\\>)",
replacement="predict")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<preparation\\>|\\<prepared\\>|\\<preparing\\>)",
replacement="prepare")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<preprimarylevel\\>|\\<kindergarten\\>)",
replacement="kindergarten")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<preschool\\>|\\<preschoolers\\>|\\<preschoolers'\\>|\
\<kindergartner\\>)", replacement="kindergartener")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<present\\>|\\<presented\\>|\\<presenting\\>|\
\<presents\\>|\\<presentation\\>)", replacement="present") #
different meanings possible?
```

```r
#allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<primarily\\>|\\<firsthand\\>|\\<first\\>)",
replacement="prime")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<principles\\>)", replacement="principle")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<problems\\>)", replacement="problem")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<problembased\\>)", replacement="problemsolving")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<procedures\\>|\\<procedural\\>)",
replacement="procedure")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<process-ask\\>|\\<processes\\>)",
replacement="process")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<production\\>|\\<productive\\>|\\<producing\\>|\
\<produce\\>|\\<products\\>)", replacement="product") #HMMM
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<proficiency\\>|\\<proficient\\>)",
replacement="proficient")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<program\\>|\\<programme\\>)", replacement="program")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<progression\\>|\\<progressively\\>|\\<progressed\\>|\
\<progress\\>)", replacement="progression") #not as in learning
progression?
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<projectbased\\>|\\<projects\\>)",
replacement="project")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<promote\\>|\\<promotes\\>|\\<promotion\\>)",
replacement="promote")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<proposed\\>|\\<proposing\\>|\\<propos\\>)",
replacement="propose")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<provided\\>|\\<provides\\>|\\<providing\\>)",
replacement="provide")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<provocateurs\\>)", replacement="provocateur")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<putting\\>)", replacement="put")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<queries\\>)", replacement="query")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<questioning\\>|\\<questions\\>|\\<questioned\\>)",
replacement="question")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<raising\\>)", replacement="raise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ranging\\>)", replacement="range")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reached\\>)", replacement="reach")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<realistic\\>|\\<reality\\>)", replacement="real")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<realworld\\>)", replacement="reallife")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<recognition\\>|\\<recognizing\\>|\\<recognize\\>)",
replacement="recognise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<recommendations\\>|\\<recommended\\>|\\<recommends\
\>)", replacement="recommend")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reconstructing\\>)", replacement="reconstruct")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<recorded\\>|\\<recording\\>)", replacement="record")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<referring\\>|\\<refers\\>)", replacement="refer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<refined\\>|\\<refining\\>)", replacement="refine")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reflecting\\>|\\<reflections\\>|\\<reflection\\>|\
\<reflects\\>|\\<reflected\\>)", replacement="reflect")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<regarding\\>|\\<regarded\\>)", replacement="regard")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reinforced\\>|\\<reinforcement\\>|\\<reinforcing\
\>)", replacement="reinforce")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<relating\\>|\\<related\\>|\\<relates\\>)",
replacement="relate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<relationbased\\>)", replacement="relation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<relationship\\>|\\<relationships\\>|\\<relations\
\>)", replacement="relation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<relevant\\>)", replacement="relevance")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<relies\\>|\\<relying\\>)", replacement="rely")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<repeatedly\\>|\\<repeated\\>)", replacement="repeat")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reported\\>|\\<reporting\\>)", replacement="report")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<representing\\>|\\<representations\\>)",
replacement="represent")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<representational\\>)", replacement="representation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<requires\\>|\\<requiring\\>|\\<requirement\\>|\
\<requisite\\>", replacement="require")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<researchers\\>|\\<researcher\\>)",
replacement="researcher") #HMMM
```

```r
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<researching\\>)", replacement="research") #HMMM

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<resources\\>)", replacement="resource")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<respected\\>)", replacement="respect")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<responds\\>|\\<response\\>)", replacement="respond")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<results\\>)", replacement="result")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reviewed\\>|\\<reviewing\\>)", replacement="review")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<revising\\>)", replacement="revise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<roles\\>)", replacement="role")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<scaffolded\\>|\\<scaffolding\\>|\\<scaffolds\\>)",
replacement="scaffold")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<schools\\>)", replacement="school")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sciencerelated\\>|\\<sciences\\>|\\<scientific\\>|\
\<scientifically\\>)", replacement="science") #HMMMM
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<scientists\\>)", replacement="scientist")
#allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<second\\>|\\<secondary\\>)", replacement=" ") #HMMM
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<seeking\\>|\\<seeks\\>)", replacement="seek")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<seemed\\>|\\<seems\\>)", replacement="seem")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<selected\\>|\\<selecting\\>|\\<selectively\\>|\
\<selection\\>)", replacement="select")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sensemaking\\>)", replacement="sense")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sequencing\\>|\\<sequentially\\>|\\<sequential\\>)",
replacement="sequence")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<serves\\>|\\<serving\\>)", replacement="serve")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sessions\\>)", replacement="session")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sets\\>)", replacement="set")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<settings\\>)", replacement="setting")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<shaped\\>|\\<shaping\\>)", replacement="shape")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<shifts\\>|\\<shifting\\>)", replacement="shift")
```

```r
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<shows\\>|\\<showed\\>|\\<shown\\>|\\<showing\\>)",
replacement="show")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<similarities\\>|\\<similarly\\>)",
replacement="similar")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<simply\\>)", replacement="simple")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<simulated\\>|\\<simulations\\>|\\<simulate\\>)",
replacement="simulation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sinking\\>)", replacement="sink")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<situated\\>|\\<situating\\>)", replacement="situate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<situations\\>)", replacement="situation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<skills\\>)", replacement="skill")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<smaller\\>)", replacement="small")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<solely\\>)", replacement="sole")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<solutions\\>)", replacement="solution")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<solving\\>)", replacement="solve")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sources\\>)", replacement="source")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<specification\\>|\\<specified\\>|\\<specifying\\>)",
replacement="specify") #HMMM
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<stages\\>)", replacement="stage")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<started\\>|\\<starting\\>|\\<starts\\>)",
replacement="start")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<statement\\>|\\<statements\\>|\\<states\\>|\\<stated\
\>)", replacement="state")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<step1\\>|\\<step2\\>|\\<step3\\>|\\<step4\\>|\
\<steps\\>|\\<step\\>)", replacement="phase") #HMMMMM CHECK THIS
OUT!!
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<stimulated\\>|\\<stimulating\\>|\\<stimuli\\>)",
replacement="stimulate") #HMMMM
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<stories\\>)", replacement="story")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<strongly\\>)", replacement="strong")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<structural\\>|\\<structured\\>|\\<structures\\>|\
\<structuring\\>)", replacement="structure")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<studentcentered\\>|\\<studentdirected\\>)",
replacement="studentcentred")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<students\\>)", replacement="student")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<studied\\>|\\<studies\\>)", replacement="study")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<subjects\\>)", replacement="subject")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<subsequently\\>)", replacement="subsequent")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<successful\\>|\\<successfully\\>)",
replacement="success")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<suggested\\>)", replacement="suggest")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<summarized\\>|\\<summarizes\\>|\\<summarizing\\>|\
\<summary\\>)", replacement="summarize")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<supported\\>|\\<supporting\\>|\\<supports\\>|\
\<supportive\\>)", replacement="support")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<surrounding\\>|\\<surrounds\\>)",
replacement="surround")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<systematically\\>)", replacement="systematic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<taken\\>|\\<takes\\>|\\<taking\\>|\\<took\\>)",
replacement="take")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<talked\\>|\\<talking\\>)", replacement="talk")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<targeted\\>|\\<targeting\\>|\\<targets\\>)",
replacement="target")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tasks\\>)", replacement="task")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<coteacher\\>|\\<teacher's\\>|\\<teachers\\>|\
\<teaching\\>)", replacement="teacher")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<technological\\>|\\<technologies\\>)",
replacement="technology")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<terms\\>|\\<terminology\\>)", replacement="term")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<testing\\>|\\<tested\\>|\\<tests\\>)",
replacement="test")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<thoughts\\>)", replacement="thought")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<topics\\>|\\<topical\\>)", replacement="topic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tracked\\>|\\<tracking\\>)", replacement="track")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<transformations\\>)", replacement="transformation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<translated\\>|\\<translates\\>)",
replacement="translate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<type\\>|\\<types\\>)", replacement="type")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<typically\\>)", replacement="typical")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<understanding\\>|\\<understandings\\>|\\<understood\
\>)", replacement="understand")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<units\\>)", replacement="unit")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<universityschool\\>)", replacement="university")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<unlike\\>|\\<unlikely\\>)", replacement="unlike")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<used\\>|\\<uses\\>|\\<using\\>)", replacement="use")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<varieties\\>)", replacement="variety")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<verbalization\\>|\\<verbally\\>)",
replacement="verbal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<viewed\\>|\\<viewing\\>|\\<views\\>)",
replacement="view")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<way\\>|\\<ways\\>)", replacement="way")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<word\\>|\\<words\\>)", replacement="word")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<working\\>|\\<works\\>)", replacement="work")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<writing\\>|\\<writings\\>|\\<written\\>)",
replacement="write")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<yearold\\>|\\<years\\>)", replacement="year")

##Specific for empirical
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<abilities\\>)", replacement="ability")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<acorns\\>)", replacement="acorn")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<adaptation\\>|\\<adapted\\>)", replacement="adapt")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<adopted\\>|\\<adopts\\>)", replacement="adopt")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<advanced\\>)", replacement="complex")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<affecting\\>|\\<affects\\>)", replacement="affect")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```r
                         pattern = "(\\\<affordances\\\>|\\\<affords\\\>)", replacement="afford")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<amounts\\\>)", replacement="amount")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<animals\\\>)", replacement="animal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<ants\\\>)", replacement="ant")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<eating\\\>|\\\<eaten\\\>|\\\<ate\\\>)", replacement="eat")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<approached\\\>)", replacement="approach")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<areas\\\>)", replacement="area")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<artistic\\\>|\\\<artworks\\\>|\\\<artwork\\\>|\\\<arts\
\>)", replacement="art")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<asked\\\>)", replacement="ask")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<assessments\\\>|\\\<assessment\\\>|\\\<assessed\\\>|\
\<assesses\\\>)", replacement="assess")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<assistance\\\>)", replacement="assist")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<assuming\\\>|\\\<assumed\\\>)", replacement="assume")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<attributions\\\>|\\\<attributes\\\>)",
replacement="attribute")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<bags\\\>)", replacement="bag")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<bands\\\>)", replacement="band")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<beans\\\>)", replacement="bean")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<bears\\\>)", replacement="bear")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<began\\\>|\\\<begun\\\>)", replacement="begin")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<behaviours\\\>|\\\<behaviour\\\>|\\\<behave\\\>)",
replacement="behavior")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<bigger\\\>)", replacement="big")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<birds\\\>)", replacement="bird")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<blocks\\\>)", replacement="block")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<boards\\\>)", replacement="board")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<boiling\\\>|\\\<boiled\\\>)", replacement="boil")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<boxes\\\>)", replacement="box")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<boys\\>)", replacement="boy")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<bringing\\>|\\<brought\\>)", replacement="bring")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<broken\\>|\\<broke\\>)", replacement="break")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<buckets\\>)", replacement="bucket")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<building\\>|\\<build\\>)", replacement="built")
#building not used as in 'house' but as the action of building
something
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<butterflies\\>)", replacement="butterfly")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<called\\>)", replacement="call")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<captured\\>)", replacement="capture")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<capitalized\\>)", replacement="capitalize")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<cartoonish\\>|\\<cartoonlike\\>|\\<cartoons\\>)",
replacement="cartoon")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<carvers\\>)", replacement="carver")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<cases\\>)", replacement="case")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<causal\\>)", replacement="cause")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<centers\\>)", replacement="center")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<checking\\>|\\<checked\\>)", replacement="check")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<chicks\\>)", replacement="chick")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<clarifications\\>)", replacement="clarification")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<clips\\>)", replacement="clip")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<cleaning\\>)", replacement="clean")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<closely\\>|\\<closeness\\>)", replacement="close")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<clouds\\>)", replacement="cloud")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<coding\\>|\\<codes\\>)", replacement="code")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<collective\\>|\\<collaboration\\>|\\<collaborate\
\>)", replacement="collaborative") # Is this ok?
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<collects\\>)", replacement="collect")
```

```r
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<colouring\\\>|\\\<coloured\\\>|\\\<coloring\\\>|\\\<colour\
\>|\\\<colored\\\>|\\\<colors\\\>)", replacement="color") # Is this ok?
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<coming\\\>)", replacement="come")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<comments\\\>)", replacement="comment")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<communitys\\\>)", replacement="community")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<compared\\\>|\\\<compares\\\>)", replacement="compare")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<competencies\\\>)", replacement="competence")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<compressing\\\>|\\\<compressed\\\>)",
replacement="compress")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<computertablets\\\>)", replacement="computer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<containers\\\>)", replacement="container")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<contextualize\\\>|\\\<contextually\\\>|\\\<contextual\\\>|
\\\<contextsensitive\\\>)", replacement="contextual")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<continues\\\>)", replacement="continue")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<contrasting\\\>|\\\<contrasted\\\>)",
replacement="contrast")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<contributions\\\>)", replacement="contribute") #Ok?
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<controlled\\\>|\\\<controls\\\>)",
replacement="control")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<correspondence\\\>|\\\<corresponding\\\>)",
replacement="correspond")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<counting\\\>|\\\<counts\\\>)", replacement="count")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<countries\\\>|\\\<counts\\\>)", replacement="country")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<covering\\\>)", replacement="covered")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<cubes\\\>)", replacement="cube")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<culturally\\\>|\\\<cultural\\\>)",
replacement="culture")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<cups\\\>)", replacement="cup")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<cutouts\\\>)", replacement="cutout")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<debriefings\\\>)", replacement="debrief")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<demanding\\>)", replacement="demand")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<details\\>)", replacement="detail")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<dialogic\\>)", replacement="dialogue")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<differentiating\\>)", replacement="differentiate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<dinosaurs\\>)", replacement="dinosaur")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<discursive\\>)", replacement="discourse")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<distributed\\>|\\<distributing\\>)",
replacement="distribute")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<dispersal\\>)", replacement="disperse")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<displayed\\>)", replacement="display")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<document\\>)", replacement="documenting") #In this
corpus these two forms relate to children documenting
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<drinks\\>)", replacement="drink")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<driving\\>|\\<driven\\>)", replacement="drive")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<drew\\>)", replacement="draw")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<drops\\>)", replacement="drop")#as in pellet, not the
verb
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<dynamically\\>)", replacement="dynamic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<eagerness\\>|\\<eagerly\\>)", replacement="dynamic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<earths\\>|\\<earthlets\\>)", replacement="earth")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<eggs\\>)", replacement="egg")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<electrical\\>|\\<electricity\\>)",
replacement="electric")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<elements\\>)", replacement="element")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<elicitation\\>|\\<elicited\\>|\\<eliciting\\>)",
replacement="elicit")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ellie\\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<emerged\\>)", replacement="emerge")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<empirically\\>)", replacement="empirical")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<enabled\\>)", replacement="enable")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<enactments\\>|\\<act\\>)", replacement="enactment")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<encouraged\\>)", replacement="encourage")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ended\\>)", replacement="end")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<energy1\\>|\\<energy-a\\>)", replacement="energy")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<engagement\\>|\\<engaged\\>)", replacement="engage")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<enhanced\\>)", replacement="enhance")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<enquiry\\>)", replacement="inquiry")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<epistemology\\>)", replacement="epistemic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<essentially\\>)", replacement="essential")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<evaporation\\>)", replacement="evaporate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<events\\>)", replacement="event")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<examples\\>)", replacement="example")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<excerpts\\>)", replacement="excerpt")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<existence\\>|\\<existing\\>)", replacement="exist")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<feeders\\>)", replacement="feeder")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<filip\\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<filling\\>|\\<filled\\>)", replacement="fill")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<finds\\>)", replacement="find")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<finally\\>)", replacement="final")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<fingerprints\\>)", replacement="fingerprint")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<firstgrade\\>)", replacement="primary")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<flew\\>)", replacement="fly")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<flowers\\>)", replacement="flower")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<follows\\>)", replacement="follow")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<foods\\>)", replacement="food")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<forces\\>)", replacement="force")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<format\\>)", replacement="form")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<fostered\\>)", replacement="foster")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<fourphase\\>)", replacement="four phase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<fivephase\\>)", replacement="five phase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<fourth\\>)", replacement="four")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<freely\\>)", replacement="free")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<frequencies\\>)", replacement="frequency")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<frequently\\>)", replacement="frequent")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<frida\\>)", replacement="student_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<functionality\\>)", replacement="function")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gamelike\\>|\\<games\\>)", replacement="game")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gardening\\>|\\<gardens\\>)", replacement="garden")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gathered\\>)", replacement="gather")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gauging\\>)", replacement="gauge")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gauging\\>)", replacement="gauge")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<generally\\>|\\<generalized\\>)",
replacement="general")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gets\\>)", replacement="get")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ginas\\>|\\<gina\\>)", replacement="example_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<girls\\>)", replacement="girl")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<got\\>)", replacement="get")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gravitational\\>)", replacement="gravity")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<group-togroup\\>|\\<smallgroup\\>|\\<wholegroup\\>)",
replacement="group")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<growing\\>|\\<growth\\>)", replacement="grow")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<habitats\\>)", replacement="habitat")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<hairy\\>)", replacement="hair")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<hands\\>)", replacement="hand")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<hanna\\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<hannah\\>)", replacement="study_teacher")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<happened\\>|\\<happening\\>|\\<happens\\>)",
replacement="happen")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<helped\\>|\\<helpful\\>|\\<helps\\>)",
replacement="help")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<holes\\>)", replacement="hole")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<homes\\>)", replacement="home")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<humans\\>)", replacement="human")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<illustration\\>|\\<illustrating\\>|\\<illustrates\
\>)", replacement="illustrate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<images\\>)", replacement="image")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<imagining\\>|\\<imaginary\\>)",
replacement="imagination")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<implementation\\>|\\<implemented\\>|\\<implementing\
\>|\\<implements\\>)", replacement="implement")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<improved\\>)", replacement="improve")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<impulses\\>)", replacement="impuls")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<inclines\\>)", replacement="incline")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<indoors\\>)", replacement="indoor")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ingredients\\>)", replacement="ingredient")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<intuitions\\>|\\<intuitively\\>)",
replacement="intuition")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<invited\\>|\\<invites\\>)", replacement="invite")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<invoked\\>)", replacement="invoke")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<issues\\>)", replacement="issue")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<items\\>)", replacement="item")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<journaling\\>|\\<journals\\>)",
replacement="journal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<keeping\\>|\\<kept\\>)", replacement="keep")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```r
pattern = "(\\\\<largest\\\\>)", replacement="large")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<larvaes\\\\>)", replacement="larvae")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<layered\\\\>|\\\\<layers\\\\>)", replacement="layer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<lead\\\\>|\\\\<led\\\\>)", replacement="leadership")
#The issue of leaves, leaving, and left. In excerpts, forms of the
verbe "to leave" where changed to "leaving". Leaves as in plant
material was not changed. Left as in non-rigt was unchanged.
#This changes were done directly in excerpts after reading the
context.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<lets\\\\>)", replacement="let")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<lifted\\\\>|\\\\<lifting\\\\>)", replacement="lift") #as in
the action of raising the potential energy of an object, not the
object of transportation
#light as in not heavy changed to non_heavy, light as physical
phenomenon kept, in light of -> in_light_of. Changed directely in
excerpts.
#like split into like (as likeness) and like (as an affective verb
-> like_affect)
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<likewise\\\\>)", replacement="like")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<limited\\\\>|\\\\<limits\\\\>)", replacement="limit")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<liquids\\\\>)", replacement="liquid")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<long\\\\>)", replacement="longterm")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<lower\\\\>)", replacement="low")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<mapped\\\\>)", replacement="map") #as in the action
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<maximally\\\\>)", replacement="maximal") #interesting
use...
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<mealworms\\\\>)", replacement="mealworm")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<mechanized\\\\>)", replacement="mechanical")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<meetings\\\\>)", replacement="meeting")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<melted\\\\>)", replacement="melting")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<metacognitive\\\\>)", replacement="metacognition")
#met as in had a meeting changed directly in excerpts.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<methodological\\\\>)", replacement="methodology")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\\<midjune\\\\>|\\\\<midjanuary\\\\>)",
replacement="study_month")
```

```
#min as in minutes changes directly in excerpts. Always
[number]_minute, as in 20_minute
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<mixed\\>)", replacement="mixing") #as in mixing
materials together.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<moles\\>)", replacement="mole") #as in the animal not
the number
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<motioning\\>)", replacement="motioned")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<motivate\\>|\\<motivating\\>)",
replacement="motivation")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<mounted\\>)", replacement="mount") #as in mounting
something on a case
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<moved\\>|\\<movement\\>)", replacement="move")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<movies\\>)", replacement="movie")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<nearby\\>)", replacement="near")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<nests\\>)", replacement="nest")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<newtonian\\>)", replacement="newton")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<noises\\>)", replacement="noise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<noticed\\>)", replacement="notice")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<objectives\\>)", replacement="objective")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<obtained\\>)", replacement="obtain")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<occurred\\>|\\<occurs\\>)", replacement="occur")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<offered\\>)", replacement="offer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<older\\>|\\<olds\\>)", replacement="old")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<opened\\>)", replacement="open")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<operating\\>)", replacement="operate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<orders\\>)", replacement="order") #as in putting
things in order
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<organising\\>|\\<organised\\>|\\<organisational\\>|\
\<organize\\>)", replacement="organise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ornithologists\\>)", replacement="ornithologist")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<outdoors\\>)", replacement="outdoor")
```

```r
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<painter\\>|\\<painting\\>)", replacement="paint")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<pennies\\>)", replacement="penny")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<performance\\>)", replacement="perform") #as in doing
somehting for others to see.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<petting\\>)", replacement="pet")
#"physical science" -> physics, physical as related to physics ->
"physics". All other instances of "physical" kept. Changes done
directly in excerpts.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<pieces\\>)", replacement="piece")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<pigs\\>)", replacement="pig")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<planting\\>)", replacement="plant")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<pointing\\>)", replacement="point")
#pose as in pose questions changed to ask in excerpt.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<possibly\\>)", replacement="possible")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<potentially\\>)", replacement="potential")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<programs\\>)", replacement="program")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<promoted\\>|\\<promoting\\>)", replacement="promote")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<prompting\\>)", replacement="prompt")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<purposes\\>)", replacement="purpose")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<pushing\\>)", replacement="push")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<puzzling\\>)", replacement="puzzle")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<rains\\>|\\<rainfall\\>)", replacement="rain")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<randomly\\>)", replacement="random")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ranged\\>)", replacement="range")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<ratings\\>)", replacement="rating")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reactions\\>)", replacement="react")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<readings\\>|\\<reading\\>|\\<read\\>)",
replacement="read")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<readily\\>)", replacement="ready")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<reasons\\>)", replacement="reason")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<recalling\\>)", replacement="recall")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<received\\>)", replacement="receiving")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<recognised\\>)", replacement="recognise")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<records\\>)", replacement="record")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<resonant\\|\\<resonated\\>)", replacement="resonate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<respects\\>)", replacement="respect")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<responding\\|\\<responded\\|\\<responds\\>)",
replacement="respond")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<resulted\\>)", replacement="result")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<returning\\>)", replacement="return")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<revealed\\>)", replacement="reveal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<rocks\\>)", replacement="rock")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<routes\\>)", replacement="route")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<routines\\>)", replacement="routine")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<safely\\>)", replacement="safety")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<samples\\>)", replacement="sample")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sandy\\>)", replacement="sand")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<saw\\>|\\<seeing\\>|\\<seen\\>)", replacement="see")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<says\\>|\\<said\\>)", replacement="say")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<scales\\>)", replacement="scale")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<schooling\\>)", replacement="school")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<seasonal\\>|\\<seasons\\>)", replacement="season")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sections\\>)", replacement="section")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<seeds\\>)", replacement="seed")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<senses\\>)", replacement="sense")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<separated\\>|\\<seperately\\>)",
replacement="separate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sequences\\>)", replacement="sequence")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sat\\>|\\<setting\\>)", replacement="set") #as in the
act of setting stuff up
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<shapes\\>)", replacement="shape")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sharable\\>|\\<sharing\\>|\\<shared\\>)",
replacement="share")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<shells\\>)", replacement="shell")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<significance\\>)", replacement="significant")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sixth\\>)", replacement="six")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<slowmations\\>)", replacement="slowmation")
#small groups and small group changed to smallgroup directly in
excerpts.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<smelling\\>|\\<smelly\\>)", replacement="smell")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<snails\\>)", replacement="snail")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<snowfall\\>)", replacement="snow")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<somethings\\>)", replacement="something")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<songs\\>)", replacement="song")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<sorted\\>)", replacement="sort")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<spanned\\>)", replacement="spans")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<specifically\\>)", replacement="specific")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<speeding\\>)", replacement="speed")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<spilled\\>)", replacement="spill")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<splits\\>)", replacement="split")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<spontaneously\\>)", replacement="spontaneous")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<spots\\>)", replacement="spot")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<squeezed\\>)", replacement="squeeze")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<standardize\\>|\\<standards\\>)",
replacement="standard")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<stereotypical\\>)", replacement="stereotype")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<stopped\\>)", replacement="stop")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<stored\\>)", replacement="store")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<strategies\\>|\\<strategic\\>)",
replacement="strategy")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<strengths\\>)", replacement="strength")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<stretching\\>|\\<stretched\\>)",
replacement="stretch")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<striped\\>)", replacement="stripes")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<striving\\>)", replacement="strive")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<suitability\\>)", replacement="suitable")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<survive\\>)", replacement="survival")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<stretching\\>|\\<stretched\\>)",
replacement="stretch")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<symbolic\\>|\\<symbols\\>)", replacement="symbol")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<table2\\>|\\<table1\\>)", replacement="table")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<teams\\>)", replacement="team")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tells\\>)", replacement="tell")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<textbook\\>|\\<texts\\>)", replacement="text")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<things\\>)", replacement="thing")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<thinking\\>|\\<thinks\\>)", replacement="think")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tools\\>)", replacement="tool")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<totally\\>)", replacement="total")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<towards\\>)", replacement="toward")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<toys\\>)", replacement="toy")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tracing\\>)", replacement="trace")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tracks\\>)", replacement="track")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<training\\>)", replacement="train")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<transformed\\>)", replacement="transform")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<transitioning\\>|\\<transitioned\\>)",
replacement="transition")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\\<triggered\\\>)", replacement="triggers")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<trying\\\>)", replacement="try")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<tubs\\\>)", replacement="tub")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<turned\\\>)", replacement="turn") #as in focused their
attention on, whereas "turns" relates to taking turns.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<twisting\\\>|\\\<twisted\\\>)", replacement="twist") #as
in the action of turning something, not "with a twist".
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<underlying\\\>)", replacement="underlie")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<utilizing\\\>|\\\<utilized\\\>)", replacement="utilize")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<valuable\\\>|\\\<valuing\\\>|\\\<valued\\\>|\\\<values\
\>)", replacement="value") #hmmm..
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<variables\\\>)", replacement="variable") #as in
concept of "a variable" parameter
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<vignettes\\\>)", replacement="vignette")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<vocabularies\\\>)", replacement="vocabulary")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<went\\\>)", replacement="go")
#whats changed to what is
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<walked\\\>|\\\<walks\\\>>|\\\<walking\\\>>)",
replacement="walk") # as in either "to walk" and "a walk".
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<wanted\\\>)", replacement="want")
#wasnt changed to was not in excerpt
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<watching\\\>)", replacement="watch")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<weeks\\\>|\\\<weekly\\\>>)", replacement="week")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<watching\\\>)", replacement="watch")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<wooden\\\>)", replacement="wood")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<worked\\\>)", replacement="work") #but not "workers"
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<worlds\\\>)", replacement="world")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<younger\\\>)", replacement="young")


#Spliting words. Since we removed hyphens, some words need to be
split.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
```

```
pattern = "(\\<subtopic\\>|\\<subtopics\\>)", replacement="sub
topic")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<threephase\\>)", replacement="three phase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<twophase\\>)", replacement="two phase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<threeweek\\>)", replacement="three week")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<videotaped\\>)", replacement="video taped")
#theres (as in there's) changed to "there is" directly in excerpts


#Specific names -> function in study
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<james\\>)", replacement="example_child")
#example_child is a fictional child used in instructional materials.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tom\\>)", replacement="example_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<john\\>)", replacement="example_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<gina\\>)", replacement="example_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<tony\\>)", replacement="example_child")

allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<lilly\\>)", replacement="example_animal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<thelmas\\>)", replacement="example_animal")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<jane\\>)", replacement="study_scienctist") #a
rolemodel for childreni n the study??
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<peter\\>)", replacement="study_scienctist")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<chris\\>)", replacement="study_scienctist")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<johannah\\>)", replacement="study_child") #a child
observed and analysed in the study
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<lily\\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<lucy\\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<markus\\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<simon\\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<susie\\>|\\<susies\\>|\\<susieastheball\\>|\\<susie3\
\>)", replacement="study_child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\<cora\\>)", replacement="study_teacher")
```

```
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<mrstreadwell\\\>)", replacement="study_teacher")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<mrscasey\\\>)", replacement="study_teacher")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<becky\\\>)", replacement="study_teacher")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<shane\\\>)", replacement="study_teacher")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<ppts\\\>)", replacement="study_teacher")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<pts\\\>)", replacement="study_teacher")

#Changed Child: and other instances of named or specific children
that appear in studies to "study_child".
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<wouassammeeschtendran\\\>)", replacement="non-english-
sentence")


##SYNONYMS
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<Theoretical\\\>|\\\<theories\\\>|\\\<theories\\\>|\
\<theory\\\>)", replacement="theory")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<certain\\\>)", replacement="specific")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<elementary\\\>)", replacement="primary")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<constitue element\\\>)", replacement="phase")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<inquiry_based\\\>|\\\<inquirybased\\\>|\\\<inquiryframed\
\>|\\\<inquiryoriented\\\>)", replacement="ibse")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<directed\\\>|\\\<directing\\\>|\\\<direct\\\>|\
\<instructed\\\>|\\\<instruct\\\>|\\\<steer\\\>)",
replacement="instruct_guide")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<curiosity\\\>|\\\<interesting\\\>|\\\<interests\\\>|\
\<interests\\\>|\\\<interested\\\>)", replacement="interest")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<instructors\\\>)", replacement="educators")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<teacher trainer\\\>|\\\<pilot centre trainer\\\>|\\\<the
trainer\\\>)", replacement="teacher_trainer")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<kids\\\>)", replacement="child")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<likely\\\>|\\\<probably\\\>)", replacement="probable")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<lives\\\>|\\\<live\\\>)", replacement="live_habitat")
#lives as in plural of life -> life.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<pretence\\\>|\\\<pretend\\\>|\\\<pretending\\\>|\
```

```
\<makebelieve\\>|\\\<played\\>|\\\<playing\\>)", replacement="play")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<onus\\>|\\\<responsibilities\\>)",
replacement="responsibility")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<papers\\>)", replacement="article") #papers in plural
only used as articles in excerpts.
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<photographing\\>|\\\<photographer\\>|\\\<photographed\
\>|\\\<photos\\>|\\\<photo\\>|\\\<pictogram\\>|\\\<pictures\\>)",
replacement="picture")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<playdough\\>)", replacement="playdoh")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<prints\\>)", replacement="print")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<previously\\>|\\\<prior\\>)", replacement="previous")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<immediately\\|\\\<promptly\\>>)",
replacement="immediate")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<pupils\\|\\\<leaerners\\>>)", replacement="pupil")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<reasoning\\>)", replacement="thinking")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<schoolyard\\>)", replacement="playground")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<sciencey\\>)", replacement="sciencelike")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<book\\>)", replacement="text")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<at times\\>|\\\<at other times\\>>)",
replacement="sometimes")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<track\\>|\\\<trace\\>>)", replacement="track_trace")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<tubs\\>|\\\<bathtub\\>>)", replacement="tub")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<tv\\>)", replacement="television")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<vs\\>)", replacement="versus")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<secondgrade\\>)", replacement="2ndgrade")
allTheoretical <- tm_map(allTheoretical, content_transformer(gsub),
pattern = "(\\\<first graders\\>)", replacement="1stgrade")


#These words either provide no meaning or are used so many times
that they obscure relevant signals.

wordstoremove<-
c(stopwords("english"),"can","also","although","may","maybe","moreov
er","mostly","onto","per se", "really","therefore","though","thus",
```

```
"xl011","xl021","xl051","xl071","xn011","xn031","xn051","xn071","xq0
11","xq031","xq041","xq051","xs021","xs091","xs111","xs121",
                "2013appendixfp10","20132014","1b","p234","p141")




#Cleaning up..

#allFilesx <- tm_map(allFilesx, removeWords, c("endoffile"))
allTheoretical<-tm_map(allTheoretical,stripWhitespace)

#Function to help make linguistic networks
#It returns an list of edges in a directed network
myWordNetwork <- function (txt,j.words) {
  # Clean data
  #remove capitalization
  #corpus.temp          <- tm_map(corpus, tolower)
  #Remove punctuations and other unnecessary things
  #corpus.removed.punc  <- tm_map(corpus.temp, removePunctuation)
  #Remove numbers
  #corpus.removed.numb  <- tm_map(corpus.removed.punc,
removeNumbers)
  #Remove Whitespaces
  #corpus.removed.white <- tm_map(corpus.removed.punc,
stripWhitespace)
  #corpus               <- Corpus(DataframeSource(data.frame(data)))

  #prepare for stemming (language is english, but TM has a package
for other
  #languages)
  #corpus.temp <- corpus.removed.white
  #corpus.copy  <- corpus.temp
  #corpus.temp  <- tm_map(corpus.temp, stemDocument, language =
language)
  #corpus.final <- tm_map(corpus.temp, stemCompletion,
  #                      dictionary = corpus.copy)
  #corpus.final<-corpus.temp
  #Prepare to remove "stopwords" such as "A", "The", e.t.c.
  # keep "declarative words"
  #my.stopwords <- stopwords("english")
  #my.stopwords <- my.stopwords[!(my.stopwords %in% j.words)]
  #Remove stopwrods
  #corpus.crop <-
tm_map(corpus.removed.white,removeWords,c(my.stopwords))

  # Create edge list for export
  edge.list <-strsplit(as.matrix(txt), split = " ")[[1]]
  #Remove unnecessary
  #edge.list<-as.matrix(corpus.final[[1]])
  #edge.list <- edge.list[edge.list!=""]
  #edge.list<-strsplit(edge.list,split=" ")
```

```r
  # index of "declarative words" (the -1 is because we're removing first and
  # last word to make it into a word-network
  node.num <- length(edge.list[!(edge.list %in% j.words)]) - 1
  #Create matrix to be exported
  export.edge.list <- array("",dim=c(node.num,2))
  #Set column names as per Gephi requirements
  #colnames(export.edge.list) <- c("Source","Target","Label")
  # Put source word except the "joining words into the matrix to be exported
  export.edge.list[,1] <- edge.list[!(edge.list %in% j.words)][-length(edge.list[!(edge.list %in% j.words)])]
  # put the target word except the "joining words into the matrix to be exported
  export.edge.list[,2] <- edge.list[!(edge.list %in% j.words)][-1]

  #Go through the joining words and put them in
  # for(i in j.words) {
  #  for (j in which(edge.list %in% i)) {
  #  export.edge.list[j - sum(!which(edge.list %in% j.words) > j), 3] <- i
  # }
  #}
  return(export.edge.list)
}
#Applying the function to each excerpt

edgelistsTheoretical<-lapply(allTheoretical,myWordNetwork,j.words=wordstoremove)
graphsTheoretical<-list()
for (i in 1:35){
  graphsTheoretical[[i]]<-graph.edgelist(edgelistsTheoretical[[i]],directed=T)
}

#Bind all excerpts together to a single edge list

allEdgeTheoretical<-rbind(edgelistsTheoretical[[1]],edgelistsTheoretical[[2]],edgelistsTheoretical[[3]],edgelistsTheoretical[[4]],edgelistsTheoretical[[5]],edgelistsTheoretical[[6]],edgelistsTheoretical[[7]],edgelistsTheoretical[[8]],edgelistsTheoretical[[9]],edgelistsTheoretical[[10]],

edgelistsTheoretical[[11]],edgelistsTheoretical[[12]],edgelistsTheoretical[[13]],edgelistsTheoretical[[14]],edgelistsTheoretical[[15]],edgelistsTheoretical[[16]],edgelistsTheoretical[[17]],edgelistsTheoretical[[18]],edgelistsTheoretical[[19]],edgelistsTheoretical[[20]],

edgelistsTheoretical[[21]],edgelistsTheoretical[[22]],edgelistsTheoretical[[23]],edgelistsTheoretical[[24]],edgelistsTheoretical[[25]],edgelistsTheoretical[[26]],edgelistsTheoretical[[27]],edgelistsTheoretical[[28]],edgelistsTheoretical[[29]],edgelistsTheoretical[[30]],

edgelistsTheoretical[[31]],edgelistsTheoretical[[32]],edgelistsTheor
```

```
etical[[33]],edgelistsTheoretical[[34]],edgelistsTheoretical[[35]])

#make separate networks for each article. Not used in manuscript
articlesT<-lapply(edgelistsTheoretical,graph.edgelist,directed=T)
for (i in 1:length(articlesT)){
  E(articlesT[[i]])$weight<-1
  articlesT[[i]]<-simplify(articlesT[[i]],edge.attr.comb="sum")
  articlesT[[i]]<-
delete.vertices(articlesT[[i]],which(V(articlesT[[i]])
$name=="break"))
}


article01T<-graph.edgelist(edgelistsTheoretical[[1]],directed=T)
article02T<-graph.edgelist(edgelistsTheoretical[[2]],directed=T)
article03T<-graph.edgelist(edgelistsTheoretical[[3]],directed=T)
article04T<-graph.edgelist(edgelistsTheoretical[[4]],directed=T)
article05T<-graph.edgelist(edgelistsTheoretical[[5]],directed=T)
article06T<-graph.edgelist(edgelistsTheoretical[[6]],directed=T)
article07T<-graph.edgelist(edgelistsTheoretical[[7]],directed=T)
article08T<-graph.edgelist(edgelistsTheoretical[[8]],directed=T)
article09T<-graph.edgelist(edgelistsTheoretical[[9]],directed=T)
article10T<-graph.edgelist(edgelistsTheoretical[[10]],directed=T)
article11T<-graph.edgelist(edgelistsTheoretical[[11]],directed=T)
article12T<-graph.edgelist(edgelistsTheoretical[[12]],directed=T)
article13T<-graph.edgelist(edgelistsTheoretical[[13]],directed=T)
article14T<-graph.edgelist(edgelistsTheoretical[[14]],directed=T)
article15T<-graph.edgelist(edgelistsTheoretical[[15]],directed=T)
article16T<-graph.edgelist(edgelistsTheoretical[[16]],directed=T)
article17T<-graph.edgelist(edgelistsTheoretical[[17]],directed=T)
article18T<-graph.edgelist(edgelistsTheoretical[[18]],directed=T)
article19T<-graph.edgelist(edgelistsTheoretical[[19]],directed=T)
article20T<-graph.edgelist(edgelistsTheoretical[[20]],directed=T)
article21T<-graph.edgelist(edgelistsTheoretical[[21]],directed=T)
article22T<-graph.edgelist(edgelistsTheoretical[[22]],directed=T)
article23T<-graph.edgelist(edgelistsTheoretical[[23]],directed=T)
article24T<-graph.edgelist(edgelistsTheoretical[[24]],directed=T)
article25T<-graph.edgelist(edgelistsTheoretical[[25]],directed=T)
article26T<-graph.edgelist(edgelistsTheoretical[[26]],directed=T)
article27T<-graph.edgelist(edgelistsTheoretical[[27]],directed=T)
article28T<-graph.edgelist(edgelistsTheoretical[[28]],directed=T)
article29T<-graph.edgelist(edgelistsTheoretical[[29]],directed=T)
article30T<-graph.edgelist(edgelistsTheoretical[[30]],directed=T)
article31T<-graph.edgelist(edgelistsTheoretical[[31]],directed=T)
article32T<-graph.edgelist(edgelistsTheoretical[[32]],directed=T)
article33T<-graph.edgelist(edgelistsTheoretical[[33]],directed=T)
article34T<-graph.edgelist(edgelistsTheoretical[[34]],directed=T)
article35T<-graph.edgelist(edgelistsTheoretical[[35]],directed=T)
#make combined network

allNetTheoretical<-graph.edgelist(allEdgeTheoretical,directed=T)
E(allNetTheoretical)$weight<-1
allNetTheoretical<-delete.vertices(allNetTheoretical,v =
which(V(allNetTheoretical)$name=="break"))
```

```
allNetTheoretical<-
simplify(allNetTheoretical,remove.multiple=T,edge.attr.comb=list(wei
ght="sum"))
prT<-page.rank(allNetTheoretical)
V(allNetTheoretical)$pr<-prT$vector
sort(prT$vector,decreasing = T)[1:10]
fgT<-fastgreedy.community(as.undirected(allNetTheoretical))
write.csv(V(allNetTheoretical)$name,"listNodesTheoretical.csv")
```

```
#Backbone extraction
#Not finished

backboneNetwork<-function(g,alpha,evalFunc){
        #Returns a backbone network based on LANS.
        #g is a weighted perhaps directed graph
        #alpha is the significance level for links
        #First, convert graph to adjancy matrix

        A<-get.adjacency(g,attr="weight")
        A<-as.matrix(A)
        #Now, convert this matrix to a probability matrix,p-matrix.
The function rowSums(A) returns a vector with the sum of allthe
entries in a row
        p<-A/rowSums(A)
        #Apparently, R interprets this division in the following
way: Divide each row, i, in A with the corresponding i'th entry in
the vector.
        #Nonparametric sparsification (Foti et.al, 2011 in PLOS
ONE)

        #This is the evaluation function. It takes a vector of
probabilities, Q, and compares each entry with the other entries in
the vector.
        #It returns the number of entries that are less than or
equal to the i'th entry.
        F_hat<-function(Q){
          x<-vector()
          for(j in 1:length(Q)){
            x[j]<-length(which(Q!=0 & Q<=Q[j]))/length(which(Q>0))
          }
          return(x)
        }
        #The following produces a matrix, sigMatrix, with values 1
for the links that are to be kept and 0 for the links that we throw
away.
        sigMatrix<-matrix(nrow = length(V(g)), ncol=length(V(g)))
        for(i in 1:length(V(g))){
          sigMatrix[i,]<-F_hat(p[i,])
        }
        sigMatrix2<-sigMatrix >= 1 - alpha

        mode(sigMatrix2)<-"numeric"
        sigMatrix2[is.na(sigMatrix2)] <- 0
        #Now multiply the original adjacency matrix with sigMatrix
to get rid of the insignificant links
        B<-sigMatrix2*A


        if(evalFunc==1){
          #directed
          h<-graph.adjacency(B,mode=c("directed"),weighted=TRUE)
          V(h)$id<-V(g)$id
```

```
            }
                else{

                        #soft
                        h<-
graph.adjacency(B,mode=c("max"),weighted=TRUE)
                        V(h)$id<-V(g)$id
                        }


#h<-as.undirected(h, mode = c("collapse"),edge.attr.comb = "min")



return(h)
}


#Alpha<-function(Q){
#   x<-vector()
#   for(j in 1:length(Q)){
#     x[j]<-(1-Q[j])**(length(which(Q>0))-1)
#   }
#   return(x)
#}

#sigMatrix<-matrix(nrow = length(V(g)), ncol=length(V(g)))
#for(i in 1:length(V(g))){
#   sigMatrix[i,]<-Alpha(p[i,])

#}
#sigMatrix2<-sigMatrix < alpha
#mode(sigMatrix2)<-"numeric"
#sigMatrix2[is.na(sigMatrix2)] <- 0
#Now multiply the original adjacency matrix with sigMatrix to get
rid of the insignificant links
#B<-sigMatrix2*A
#Now create a graph from the new matrix.
#h<-graph.adjacency(B,mode=c("lower"),weighted=TRUE)
#V(h)$id<-V(g)$id
```