ILO summary

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Abstract

This document presents a brief overview of the current state of the *Intended Learning Objectives* (hereafter *ILO*). Included is information on: + The orientation of language used in *ILOs* + The most common objectives broken down by Level and Concentration + A description of how the objectives map to Bloom's Taxonomy of learning. + Recommendations In this section I give a basic overview of our data. ##Import data

Number of courses

I have data for:

these do not include the projects.

Distribution of ILO per course

Total number of ILOS

Course vs Student orientation

ILOs are formulated either as student learning goals or course objectives:

in percentages:

the ILOs I did not know how to classify are:

Basic Text analysis

I count the appearance of words accross all courses, and add that number to the dataframe.

Here is the very basic count of words that appear:

Classes of words

I will manually remove some of the common words such as prepositions and conjunctions:

removing common words:

Universal part of speech

Alternatively, we should check out this package, created by the Institute of Formal and Applied Linguistics of Charles University, Czech Republic at the Faculty of Mathematics and Physics. http://ufal.mff.cuni.cz/udpipe

Lables are as follows: ADJ: adjective ADP: adposition ADV: adverb AUX: auxiliary CCONJ: coordinating conjunction DET: determiner INTJ: interjection NOUN: noun NUM: numeral PART: particle PRON: pronoun PROPN: proper noun PUNCT: punctuation SCONJ: subordinating conjunction SYM: symbol VERB: verb X: other

Annotating the data based on the language model:

Filtering for verbs:

Universal Verb counts

Breakdown by Level

Manual analysis display

For each of the ILOs the verb describing what the student is intended to learn was extracted manually. This created a distiction between the course verb and the student verb. For instance, for the ILO "to provide students with [...] perspectives to examine..." (COR1004, p.1) the extracted verb is "[to] examine".

Let's have a look at all the verbs I extracted.

First, I clean the data to have all verbs in one column. I replace `NA` with a character (`"NaN"`) to be able to remove `NA`s created by `gather`, after those have been filtered out, I return `"NaN"` to `NA`.

as you can see some verbs are really similar, for example, we have: "to understand", "understand" and "basic understanding". Let's group all of these together.

We will need an or function to help with regular expressions:

First find similarities

NOTES: *"gain basic practial knowledge" and "use knowledge" might not be correct under "know" rather in "apply".* "think analytically" and "reason analyticaly" don't have a clear interpretation to me.

We notice that some of the words recognized by are not quite equivalent. Therefore, I create equivalent classes for filtering:

Next, I create standardizing functions that use those equivalent classes to replace all verbs in the same class for a single verb.

Finally, I standardize the data by applying our functions so all verbs in equivalent classes are mapped to the same verb. Now, our data is clean.

Lets see what I ended up with:

Time for some summary graphs and summary statistics: ###Summary Statistics ####Total verbs in ILOs:

we have 856 verbs (objectives). ###Graphs ####Universal Verbs Universal use of verbs:

Breakdown by Level