Let’s Argue about STEM!

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Introduction:
STEM Integration in K-12 Education: Status, Prospects, and an Agenda for Research has called for the implementation of STEM education into classrooms to help prepare students for a STEM workforce (Honey, Pearson, & Schweingruber, 2014). Within this policy document, it highlights the collaborative nature of STEM education within the classroom and discusses argumentation as a practice to help foster this collaboration. Currently, argumentation has been discussed in the context of specific disciplines (Ingla, Mejía-Ramos, & Simpson, 2007; Erduran & Jiménez-Aleixandre, 2008; Mathis, Siverling, Glancy, & Moore, 2017), rather than across them. This could potentially pose an issue for the implementation of argumentation within STEM classrooms, if our current teaching practices only highlight one of the disciplines. Because of this potential issue, we are interested in the similarities and differences between discipline-specific argumentation to help gain an understanding of STEM argumentation, specifically the reasoning that would need to be utilized within the argumentation.

Methods:
Corpus Development:
- The SCOPUS database was used to identify articles
- Keywords pertinent to the topic of argumentation were used to identify articles
- Timeframe was limited to the past 10 years of peer-reviewed publications
- 656 publications were retrieved as a base corpus
- Removed search terms (e.g. engineering, education, argumentation)
- Tools was used to help understand connections across the papers in regard to the topic of interest
- Generated Word clouds
- Examining these articles could help develop a standard language across the disciplines.

Future Directions:
This preliminary analysis has illuminated the following:
- The priorities and implementation of argumentation is discussed differently in the disciplines. Can a “persona” of argumentation be developed to enhance the development of practice?
- Examining the duplicate articles offers unique insight into understanding STEM. There are multiple articles that include ideas from more than one discipline, yet are not considered as STEM. Examining these articles could help develop a standard language across the disciplines.
- Searching SCOPUS allowed for both advantages and disadvantages. We are aware of major disciplinary education journals not being included in our search. Comparing the results from the SCOPUS search with another database like Google Scholar will be beneficial.

References: