

Analyzing and Visualizing Open Annotation Data to Support Educator Learning

Abstract: This presentation concerns the Marginal Syllabus, a professional development initiative that convenes and sustains conversations with educators about equity in education via Hypothesis annotation (Kalir, in review). We will discuss how open data produced during educator annotation conversation is collected, analyzed, and visualized to understand and support professional learning (Kalir & Perez, in review).

Presentation Goals

One goal of our research is to make Marginal Syllabus workflows, analyses, and outcomes as transparent and accessible as possible for multiple audiences (educators, developers, researchers). Like a business intelligence tool, we have developed a means of real-time extraction, transform, and access (RETA) of Hypothesis open data. RETA automatically extracts, transforms, and loads open Hypothesis data associated with educator annotation. To detail patterns in educator annotation - and subsequently generate learning analytics, visualize activity, and describe peer interaction - RETA provides high-level analyses about educator use of Hypothesis during Marginal Syllabus activities, like total and temporal participation metrics (i.e. annotations, replies, threads), as well as graph visualizations of conversations. One visualization highlighted during our presentation includes: annotations and replies displayed as nodes; directed edges depicting conversation flow; annotation and reply text readable when hovering over a node; and interactivity as each node has an embedded link providing reentry back to the original annotation in context.

Our presentation will also discuss how RETA runs as a publicly available web service, providing baseline analysis methods to any URL containing Hypothesis annotations. Finally, our data analysis is publicly available via shared Jupyter notebooks hosted on CoLaboratory; all our data and processes (i.e. educator participation, network graphs, topic modeling, sentiment analysis) are accessible and reproducible through open Jupyter notebooks.

A primary takeaway for educators and instructional designers concerns the importance of creating open professional learning for educators as architected by Hypothesis open annotation. For developers and researchers, a key takeaway concerns how Hypothesis open data is extracted, transformed, and loaded; unlike a typical ETL process that loads an output to another database, RETA outputs go directly to the user and do not require the creation or maintenance of a separate database for reporting.

References

Kalir, J. (In Review). The emerging role of open web annotation in communities of practice. Manuscript submitted for review to *Technology, Knowledge and Learning*.

Kalir, J. & Perez, F. (In Review). The Marginal Syllabus: Educator learning and web annotation across sociopolitical texts and contexts. Book chapter submitted for review to *Social annotation in modern learning contexts* (ed. Alan Reid).