Short answers to deep questions: insights from tutorial dialogue

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It is well established that teaching interactions, such as formative feedback, are central to deep learning and ultimately student engagement and academic success (Zepke and Leach, 2010; Hattie and Timperley, 2007, Hattie, 2009). However, in large class settings (formal University or tertiary classes, informal MOOCs or open education courses) the options for individualised interaction with teachers, in particular through formative feedback on student writing (short answers and longer essay style), remain severely restricted. In order to address the practical problem of automating the analysis of student responses we suggest that it is essential to explore the complex relationships between language, learning and teaching.

There are broad parallels between constructivist theories of learning such as those of Vygotsky and the systemic functional linguistics theory of M.A.K Halliday (Wells, 1994). At a practical teaching level, the academic literacies approach to academic writing (Lea and Street, 1998) embodies the idea of writing as ‘process and product’; it is both generated by and produces its wider context. This approach aligns well with corpus studies which provide clear empirical evidence for disciplinary differences in writing style (Biber, 1998). More recently, evidence for distinct disciplinary literacies has appeared through functional linguistic analyses of disciplinary texts (e.g. Fang, 2012). Some scholars differentiate what they term disciplinary literacy from more general literacy skills (Fang, 2012; Hynd-Shanahan, 2013).

In this poster, we use the concept of disciplinary literacy to frame our research and situate it in the context of discourse-centric learning analytics (Knight, and Littleton, 2015; Ferguson and Shum, 2012). We describe a preliminary analysis of student written responses, captured by a surface-based natural language tutorial dialogue system, in a large-class setting (McDonald et al. 2012 and 2013) and present discourse examples, which illustrate the nature and quality of the students' responses and the relationship between responses and curricula material. Working from these examples we briefly illustrate the use of automated techniques to facilitate analysis of the teaching and learning discourse.

For example, through the use of corpus techniques such as collocation and concordancing we identify where student responses to deep questions such as, please explain ... or please describe ..., are directly derived from course materials or lessons, sometimes in unexpected ways. Often student responses are coherent but are written in non-specialist language and automated techniques such as keyword identification coupled with concept mapping can provide an indication of disciplinary language adoption.
Using the examples as a base we identify two specific challenges related to learning in large class settings: Can we harness the power of discourse-centric learning analytics to characterize the language that students use and develop in a disciplinary context? Can we characterise disciplinary language and compare it with student language (or interlanguage) to provide actionable insights for teachers?

References:


