HCI prerequisite relations midsemester feedback

The client was very good about providing data, discussing data formats and variable meanings, and even reformatting/regenerating data to make the data munging that the team needed to do easier. After a couple of recent meetings the team has a clear idea of the hierarchical structure of the data, how to clean the data and even how to do some EDA and initial analyses.

The team is exploring conditional probability relationships among skills, as well as fitting gaussian graphical models to subsets of the data. Some important next steps will be

1. Learning the detailed meaning of knowledge components so the team can combine its knowledge of elementary mathematics with the tutor data to make conjectures about prerequisite relationships; discussing these ideas with the client as you are forming these conjectures will also be useful
2. Trying (and inventing) other outcome measures; there are many possibilities and organizing the possibilities into groups by what data they rely on and/or what they mean about performance will help this part go more efficiently
3. Looking at other ways to examine possible prerequisite relationships in addition to gaussian graphical models. For example, can we use logistic regression or some other means to calculate the probability of success on skill B, when skill A is (or is not) mastered, while controlling for other skills? Or can we use the “causal modeling” approach in the Scheines et al paper?

The team has put a lot of effort into getting and understanding the data as well as initial EDA and gaussian graphical model fits. You are on track to produce a nice paper for the client.