INSIGHT: Thinking Issues

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Framing a Research Study

For students inexperienced in undertaking a research study the whole process can be something of a mystery. Framing a research study also poses a challenge for educators, who must find quick and simple ways to scaffold learning to help students understand the research process. This is especially true when the aim is to complete a shorter study within a postgraduate or senior undergraduate course. Some postgraduate programmes will have a specialized research methods [3] course as part of the curriculum, which may ease the task. However, in many cases, students quite new to research may be required to undertake a research study lacking any clear notion of process or method. So often some form of apprenticeship model is operated where the research design is laid out by the educator for the student to follow (e.g. a given experimental design or a set of predefined simulation scenarios to run). Yet this overly scaffolded learning design shields the student from the realities of research, limiting them to the 'how' questions and avoiding the harder questions for the junior researcher of 'what' and 'why'? Faced with this challenge when teaching a Masters level course in Collaborative Computing [1], I devised a guided research process for their project based assignment. Students had to prepare a project proposal for discussion and approval prior to conducting their research study. I made available a number of possible datasets and a list of candidate research frameworks drawn from the course readings. Students could choose for themselves a selected dataset and a framework from the options available to them, but needed to independently develop a meaningful research question and determine how they might analyse the chosen data. After many sessions and discussions with confused and somewhat anxious students, I devised the model in figure 1which seemed to help make the process more clear to them. It depicts a relatively linear process, but does allow for iterations back to the research question and the framework. It has proven helpful in supporting constructive dialogue about missing elements in a proposal, or aspects of the research design that need more attention.

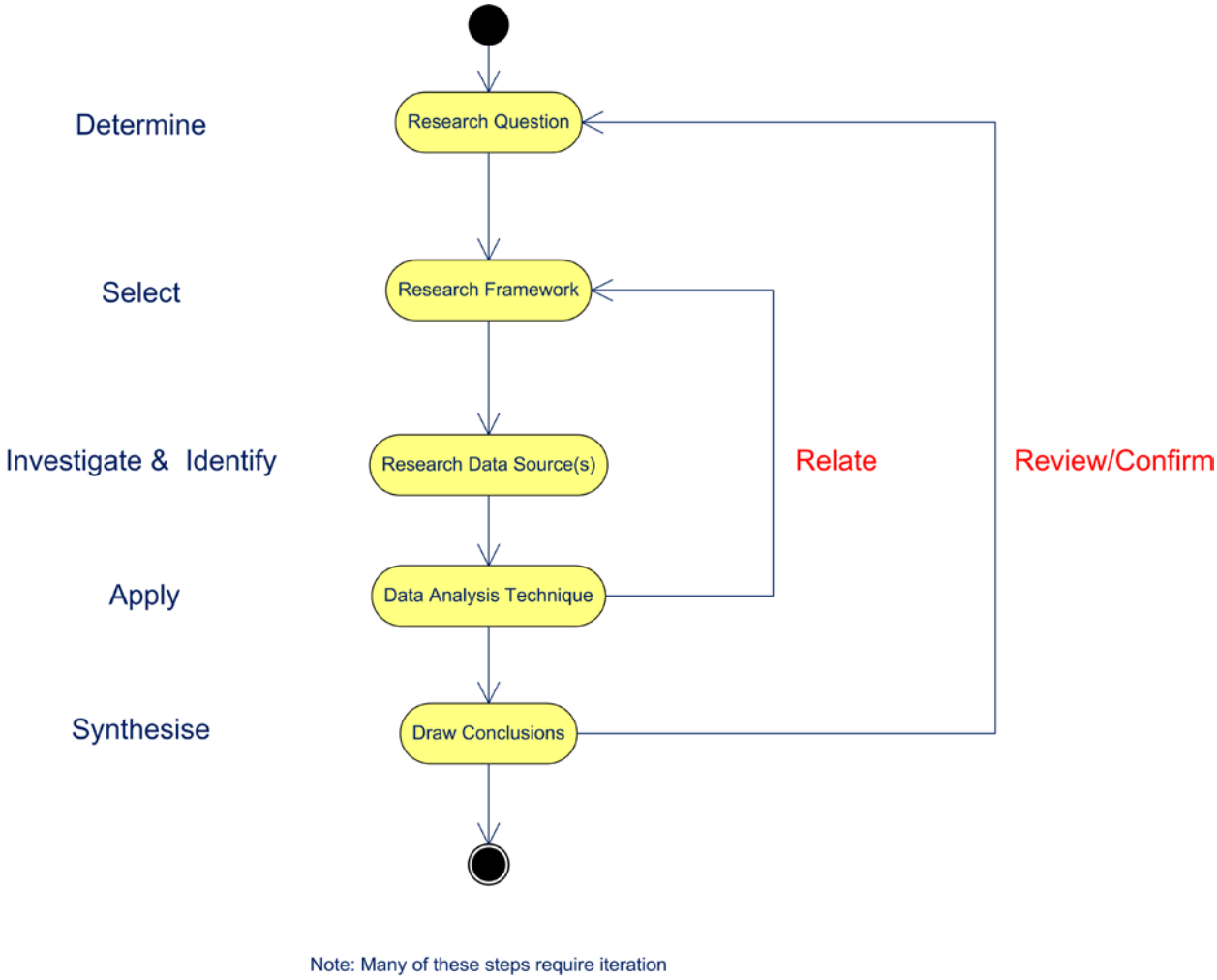

Figure 1: A Model for Framing a Research Study

[Insert Sidebar here?]

However the model appears to have wider utility even at the doctoral level. While visiting at Uppsala University a few years back I had the chance to discuss his doctoral work with Mattias Wiggberg and the model seemed to have explanatory value and served to clarify the process he needed to follow. In fact he even included a copy of the model in his thesis [9] to illustrate how he had framed elements of his study. Since then I have applied the model to good effect with PhD students working within our own Software Engineering Research Lab.

Of course the model does not neatly map to all forms of research study. It may not suit projects with more of a constructive or design based methodology such as [6, 7], or studies with more of a focus on the capturing of new data rather than the analysis of existing data. Likewise while the first step of determining a "research question" may equally be replaced with "define a research hypothesis", the

model does not fully support a survey or experimental research design, or for that matter a systematic literature review [2]. It is probably better suited to an interpretive rather than an objectivist design paradigm [8], although it is silent on the question of researcher stance. That was a natural enough omission when trying to avoid the complexities of philosophical stance working with novice researchers. In conclusion, the model like all models does not reflect the full complexities of reality. However I have found it a useful simplification of the research process, which has enabled students to undertake relatively sophisticated studies and demonstrate real insight in the context of a single semester long Masters level course [4,5]. It is presented here in the spirit of an ITiCSE conference "tips and techniques" session, as a potential tool to support constructive dialogue between educators and research students seeking to frame their research studies.

References:

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