



## Power tools for inciting critical thinking among new research students

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### INTRODUCTION

The issue of research is a topic of interest in undergraduate medical students and needs to be carefully addressed. The undergraduates in their academic career when exposed to research and its complexities are unable to fully understand and implement their understanding in research and are usually seen fully dependent on their supervisors. Although the supervisors are responsible for providing the guidance, but the scope of the guidance usually widens keeping in view the understanding of the research student which although helps getting through the research by then but the students are not empowered to carry out the research on their own and never become independent regarding the aforementioned. As a consequence, the stimulus of promoting a research culture among undergraduates gets diluted.

The purpose of the article is to enlighten and promote the objective of critical thinking among students so that it not only helps them in doing their research projects but empower them to carry out their independent work thereby objectively galvanizing a research culture among them<sup>1</sup>.

### DISCUSSION

Research is an art of investigating things and/or different information systematically to establish new facts and reach certain conclusion<sup>2</sup>. The driving force behind this is simply the curiosity of the researcher.

Even though, different factors do play a role in the development of the whole process. But since the discussion focuses on stimulation of the research culture and inciting critical thinking the in the young minds of the students, the author would term the curiosity to learn and investigate as a driving force to incite novel research thinking in the minds of young students. This curiosity would lead to developing certain research questions which will further strengthen the critical thinking phase; a trait always needed for good research. Usually at this stage a student undergoing research starts to think about how to proceed in the said matter. The flow of research thoughts starts from general to specific. Here are few steps which can be considered as a guide line.

#### Step 1: Identify the target area or domain

The first step is to identify a target area or a domain in which the student wants to research. This can be selected depending upon the interest and/or other factors best known to the research supervisors. Nevertheless, the identification of the targeted area is the first step to start a research process as this will lead to further analysis and critical evaluation of the selected domain by the student. At this stage a supervisor can refine the given idea and provide guidance.

#### Step 2: Identify the problem

The second step starts after the identification of the research area, the flow of thoughts now start to shrink

and become specific as the researchers have to limit their critical thinking to the selected area and more in depth analysis becomes the primary focus. It will also help the student to analyze the specific target area more intensely.

### **Step 3: Clarify the problem**

Most of the time, the problem identified will be too broad in scope, the students need to narrow the scope of the problem under investigation. This is a very important aspect of the research as the feasibility of the study is dependent on this step. This is also important as it demonstrates the keen observation and pinpoint research thinking of the student.

### **Step 4: Curiosity leads to generation of research questions**

After the identification of the problem, the researcher's curiosity leads to development of some questions which the researcher wants to answer. These questions are the research questions that form the back bone of the research process and provide the tools to design the research study and become research hypotheses. A research hypothesis is actually a research question in a more refined form ready to be tested and critically evaluated by different research techniques.<sup>3</sup> At this moment the author would limit the discussion specifically to the scope of students' understanding.

### **Step 5: Getting background information**

Now the problem has been identified and research questions are generated. The student must go through the information already available about the said problem. The background information can also serve as a knowledge base to rectify and/ or further strengthen the aforementioned research steps.

### **Step 6: Review literature**

The next step is to review that very information.

Students need to develop an investigational skill and incorporate it in their critical thinking. The literature review will empower an investigator about what have been done in the said regard and how the design was executed.<sup>4</sup> The background information needs to be critically evaluated for significance as well as any shortcomings be carefully analyzed. This exercise will not only help the students to avoid any shortcoming in their own research study but also promote critical evaluation and incite potential reviewing skills in future.

### **Step 7: Study designing**

This stage initially will be dominated by the research supervisors until and unless the students learn to design the research studies. The research questions thus generated in step 4 and literature reviewed in step 6 will help in defining the concepts and research hypotheses is finalized.

At this stage, the objective of galvanizing the research culture in students is fulfilled and the further steps in executing the design are best known to the research supervisors what they deem fit. However, students once undergone a research under their supervisor will surely come to know those techniques and would develop the expertise with the passage of time and further studying research at a higher level. Since the objective of this editorial was to incite a stimulus for research in undergraduate research students, following the aforementioned steps would do that.

## **CONCLUSION**

The undergraduate students who are new to the concept of research, by following the aforementioned steps would be able to have an understanding and be empowered to carry out research activities by them. Over the long run, it will promote critical thinking among them thereby promoting the objective of galvanizing a research culture in the society.

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