# Research Methods Assignment 4

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### 1 Abstract

Academic research differs widely among various disciplines. Despite these differences, all academic research has to begin with finding a research problem.[2] This article discusses what a researcher should keep in mind when choosing a research problem, the benefits of stating the problem clearly, and the basic types of research.

# 2 Introduction

Research is a venture into the unknown. The first step in converting what is unknown into knowledge is to find problems or questions that have not already been answered. Once a research problem is known, the researcher can help focus their goal by stating concisely what question the research is attempting to answer. By finding an answer to that research problem, the researcher is then able to expand the frontier of what is known in their field.

### 3 Research Problems

There are many various methodologies to solving research problems across different fields of academia. Regardless of the approach that one takes, the same basic principles apply when finding a research problem.

#### 3.1 Finding a problem

In order to find a problem, a researcher must be up to date with all that has been done in their field, what others are working on, and the areas that are "hot" right now. This can be done with keeping up with literature from various journals and conferences directly related to their field. Through reading they will develop the base knowledge to develop ideas on top of.

When searching for a problem, the researcher must keep two things in mind. One is the feasibility of what they are proposing, and the other is how much knowledge the research is going to contribute to their field. [1] When starting out, a graduate student should most likely choose a research problem that is both small in scope and contribution. This is to build the young researcher's confidence level so that they can eventually start tackling bigger issues. [1]

If a graduate student has experience, then that is when they can start moving up the level of contribution their research will provide. When this happens, the graduate student should still keep in mind that they are one graduate student working on one dissertation. In other words, could the student possibly hope to answer their research question in a reasonable amount of time.

Research labs on the other hand, will have the resources to tackle even bigger problems. Which a student could still be involved with, but they have to understand that they will only contribute a small piece to the bigger problem that a lab is attempting to solve.

#### 3.2 Stating the Problem

A researcher needs to be able to concisely state the problem that the research will attempt to address, and be able to phrase the problem in a way that can focus the research in a particular direction. The research problem is what the entire research project will be based on, so it is imperative to be able to clearly state the goal of the research.

# 4 Types of Research

There are two basic types of research. Basic and applied. Most contemporary research conducted in Computer Science falls into the applied category. We will see though that the line between the two can sometimes become blurry when examined closely.

#### 4.1 Basic

Basic research sole purpose is to expand the knowledge of fundamental problems in a field. They have no seemingly immediate practical uses in society, but rather become the building blocks for new ideas and inventions. When choosing a research problem, a Computer Science researcher should note that it is harder to obtain funding for basic research. This explains why most research today falls in the applied category.

#### 4.2 Applied

The goal of applied research is to solve an existing problem that has a practical real world use. It solves a specific problem that has an immediate benefit on society. Most funding bodies now days want research that not only expands basic knowledge, but has an immediate benefit to society today. [3] Just because research expands basic knowledge, does not make it basic research. It is possible that in whatever knowledge is discovered becomes obsolete in a few years due to the nature of applied research. On the other hand, it is possible that applied research will discover something that is used for many years, and at that point it is hard to discern whether the research solved a basic or applied problem.

### 5 Conclusion

Discovering research problems is one of the fundamental activities that one can do as a researcher. Without a properly guided research problem, the research project will suffer from disorganization. A research problem will also try to solve either a fundamental science problem, or a applied problem that benefits society immediately. With all this in mind, when a researcher sets out to find a problem to solve, they need to find problems that meet this criteria, and that they have a personal interest in.

## References

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