



Junior
Seminar:
CS/INFM 580
Preparation
for Senior
Projects

Oliver
BONHAM-
CARTER

Gimme an
idea?

This Course

Research Area

Finding Literature

Determining
Feasibility

Big Questions

Writing

The Intro, Related
Works and Method

Finding Methods

To get there?

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17 January 2024



Your Senior Comp Research Subject

Many competing students may ask...

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Gimme an idea?



- Senior Thesis class proposal
 - *How to come up with a good (achievable) idea?*

Your Senior Comp Research Subject

Many comping students ask...

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How can I be successful in completing my comp?

- I have an idea, how to start implementing it?
 - Could I program well enough?
 - Could I implement an algorithm?
 - Will I collect the correct data?
 - Will I understand my results?
 - Could I write the final proposal?
 - Could I write the final document?
 - Will I find relevant literature to read
 - Will do I need to know about my area?

Getting started

- I may need some help getting started
- Let's see what's out there ...

Navigation in Research

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● Cool; But how do I use this?!



Research Flowcharts ...

How to start my project?

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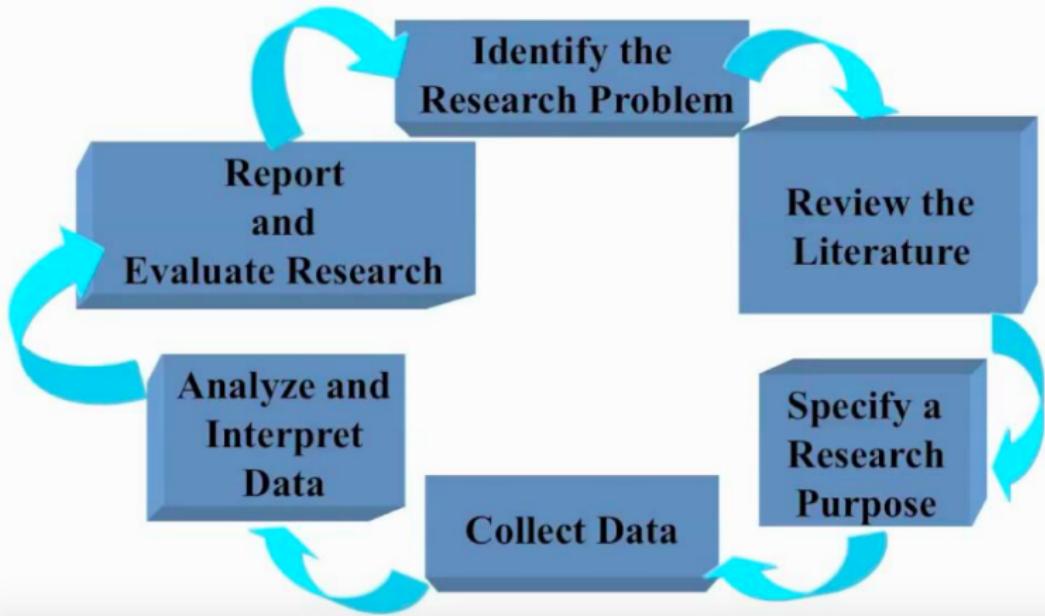
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- What are all these steps??
- How can I use them?

A Cheery Diagram



- This diagram is more cheery, but the same steps as before?
- I still have the same questions: How can I use these steps?

Senior Research, the Game Board

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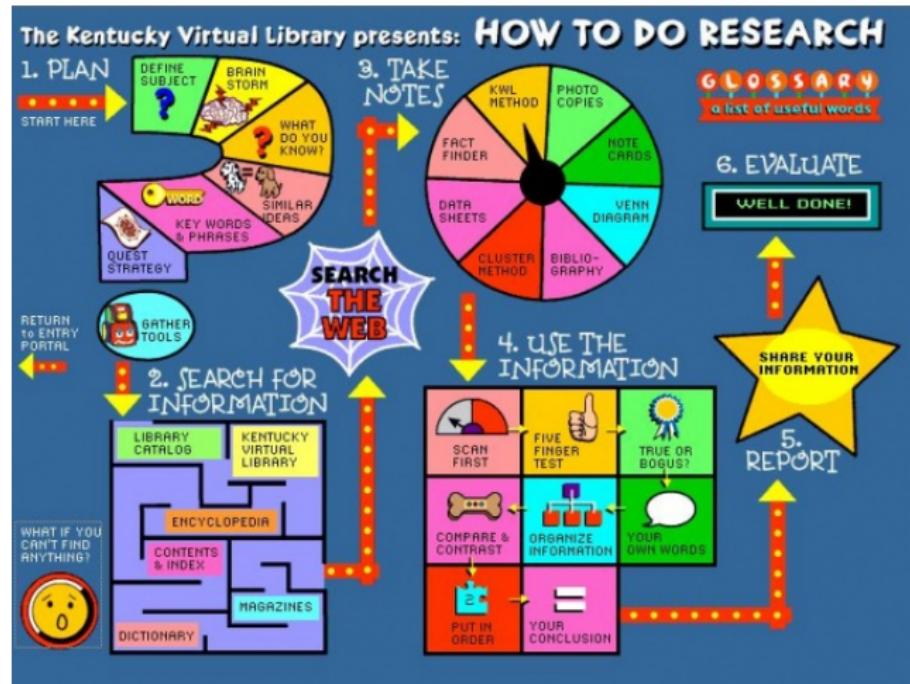
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- This is really not helping me!
- still have the same questions: How can I use these steps?



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Information Overload!

I am overwhelmed!

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Learning how to do research from the Internet

- Is almost like taking a drink from a fire-hose



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Help is Coming!

A class to teach me how to do my own research?

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- This looks like a job for:

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Articulating the Research Area

We learned this!



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How to begin a project ...

- Decide on a topic: find your *passion-zone*
- Narrow down the area: anything you find in your passion-zone should be fun
 - General Area → reduced topic → Focus area (niche)
 - Ex: Algorithms → Sorting Algorithms → A Novel Sorter
- Lightning talk: *Area of interest, Assignment 2*

Background Research

Literature

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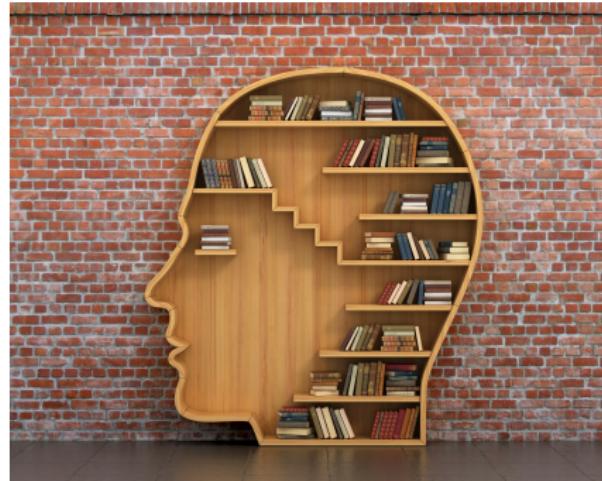
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To get there?



How to find out what is already known about my area?

- Literature Review
 - What is known from peer-reviewed studies in this area?
 - How can I build on this knowledge?
- *Ideas from Articles, Assignment 3*

Feasibility

Do background research

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To get there?



How to determine what else is involved in a project?

- Feasibility

- What are some of the project's associated tools, libraries, software, data and etc?
- Can I access these elements to help in my own project?



Follow a Research Question

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How to determine core issues of a project

- What is /are my main focuses?
 - Is there an *over-arching goal* to this work?
 - What will solving this problem do or *look like*?
 - What is /are my secondary focuses?
 - What are further applications to this work?
 - What other types of problems can I now solve, with my solution?

The Parts of the Proposal

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To get there?

Consider these ...

- What question(s) am I trying to answer?
- Why is my work relevant?
- What kind of approach am I to use to get there?
- How to introduce the details of the written proposal
- How much detail to add?
- When to introduce these ideas?

Some more ideas to consider ...

Introduction

How do I grab my reader's attention?

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To get there?



- You begin with an outline to organize your thoughts ...
 - How to introduce the project in a way that makes readers continue to read
 - What kinds of supporting documents to include to substantiate the relevance of the project.
 - When should I introduce each of these elements??
- Then we add detail to the outline to *grow-out* the body of text that is the introduction.

Related Works

What supports my work?

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To get there?



- You begin with an outline to organize your related works section
- This section tells a story of what is known or has been done in your research area.
 - When should I introduce the articles of the related work??
(It matters!)
 - Then add the details to the outline *grow-out* the discussion.

The Method and Accessories to the Method

What approach am I going to use?

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To get there?



- What method (and its associated part) to complete the project and how to link them together?
 - What programming languages? What data? What algorithms? What techniques? What libraries?
What-what-what?!

So, How Do We Get There?

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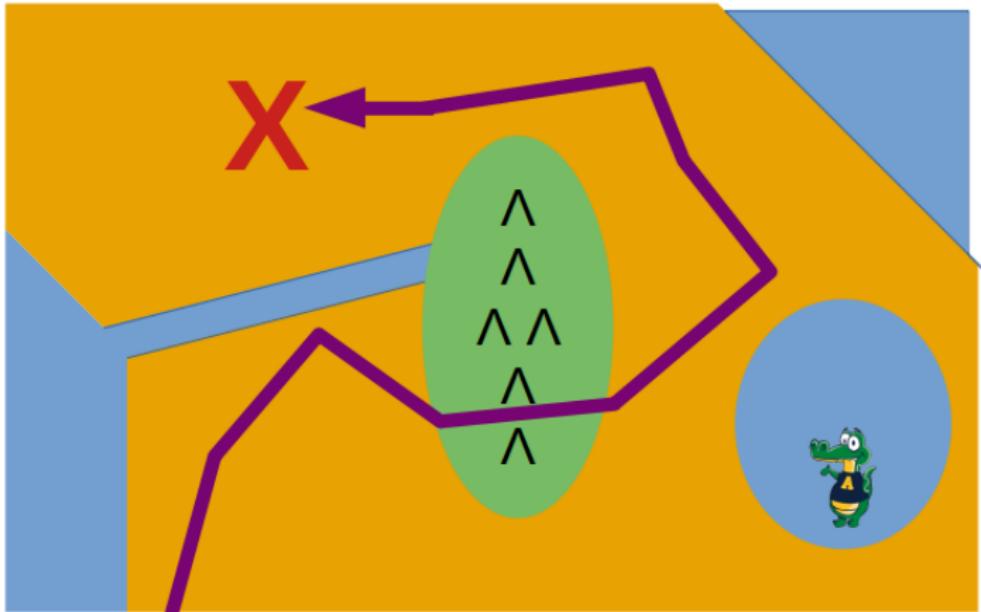
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To get there?



A map to answer a question

Given an Idea to Follow

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To get there?



- Given a *feasible* idea in the area of your major
- Pick up the literature, development and all other stages of the research to develop this project

Then Use your new Skills to Develop Your Own Idea

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To get there?

- By the middle of the semester, you would have gone through most the stages of research and so you will be able to apply the research steps toward **your own research idea.**
- You will need to complete the following steps:
 - Explore a topic, come up with an idea
 - Literature review
 - Create a prototype to demonstrate the feasibility of the project

Interactions with others

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To get there?



- We will be meeting with department faculty
- Meeting with current comping students (folks from 610) on Fridays
- Meeting with each other in this course!



Getting to Know You!

Activity 01

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Survey

- Please complete the below survey to help me to get to know you better!
- Survey address:
<https://forms.gle/ChnPifDU4ETRTNiH7>
- This is a checkmark grade

THINK