A Proposal and Thesis Guide

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April 20, 2010

I will present some suggestions for proposal and thesis writing, in two parts. The first part, *Cut to the Chase* being a bullet list of steps to take, while the second part is a more detailed and leisurely elaboration of the first part.

Part I: Cut to the Chase

Here is a skeleton outline of the components of a proposal (note: there is preliminary work to be done as far as deciding on a proposal in the first place, but, once that is done, here are the parts to be included). You will learn (or recall) that there are three major perspectives you can adopt in writing your proposal: Quantitative, Qualitative, and Mixed. Actually, in practice, there is only one, Mixed, but it's common to claim some kind of methodological purity, either qualitative or quantitative!

Along with one of the major perspectives there is always an underlying world view that determines how you claim to be presenting new knowledge. I am talking here about the knowledge claim ideas embodied in: PostPositivism, Constructive Alternativism, Advocacy/Participative engagements, and Pragmatism.

The Quantitative perspective is most comfortable with the ideas of *PostPositivism* with its 'objective' hypothesis tests relating a few variables, measured by instruments. This would be the approach used to calculate *average gas mileage* for a particular brand of car. You would try to eliminate or control all but the few variables needed to calculate gas mileage, especially you would try to eliminate the human component.

If you want to find out peoples *attitudes* toward a particular brand of car, for example, you will probably conduct a Qualitative approach with interviews and surveys. To describe people's attitudes and perspectives you will most likely look to *Constructive Alternativism* as a basis for your knowledge claims. That is, you want to know how people *construe* their world regarding this particular car. This is also related to *social knowledge*, that is, knowledge within a person's culture.

Advocating for higher gas mileage will require more input from multiple constituencies with all their various prejudices and rationales. However, those prejudices and rationales are exactly what you want to capture and display so you will probably use a Qualitative perspective and point to the knowledge claim, Advocacy/Participative as the basis for your approach.

The advocacy for higher gas mileage, however, will most likely involve both people's opinions as well as some quantitative data on the consequences of higher or lower gas mileage. This suggests a Mixed approach that is usually related to an underlying knowledge claim based on *Pragmatism*.

Generic Proposal Outline

- Abstract - this is a very short summary for readers who want a 'cut to the chase' description of your work. The abstract tells the reader the answer(s) to the research question.
- Introduction -- this introduces the reader to the context of your work. Some authors (Creswell, 2003) call this 'framing the problem within the existing literature'. In this section, tell the reader how your work fits into some general context.

- Purpose -- why are you writing this proposal or thesis? What is your intent here? This is not the research question but rather, the incentive for constructing one. What is so important about your exploration? What significant consequences might follow from pursuing your research?
- Research Question -- this is the nexus, the focal point of the whole paper. This distills out of all the purposeful questions you *could* be asking and answering, the one you consider most important for a reader to consider. Answering this question to the satisfaction of your target audience is the whole reason for your paper.
- Theories used to answer your research question -- if you adopted a quantitative approach this might consist of setting up and running and interpreting regression equations. If a qualitative approach this might be one of the advocacy, participatory, or emancipatory techniques. Mixed means just that, use both approaches to convince your reader that you have satisfactorily answered the research question. (More detail on these approaches: Quant, Qual, and Mixed come later in this paper).
- Boundaries and limitations -- you won't be able to solve world hunger (at least not initially) so what can you reasonably expect accomplish?
- Summary and Conclusion -- this is essentially what the abstract should say. Summary is what the answer to the question is and 'conclusion' is what you propose, going forward.

Scripts for Getting Started

I have adapted scripts from the excellent book *Research Design* 3rd edition Creswell.

Qualitative Research Outline (Constructivist Interpretive perspective)

Introduction - statement of opportunity/problem/situation with accompanying literature and the significance of the study.

Purpose of the study and how it will be constrained by factors such as time, scope, data availability, knowledge and other considerations.

The research questions/hypotheses

Procedures - what are your assumptions for qualitative research, research strategy, your role in the research, how you will collect the data and how to validate it.

What are the anticipated ethical issues

Preliminary pilot findings (when available) and expected outcomes.

Appendixes: Interview questions, observational forms, references

Qualitative Advocacy/Participatory Perspective

Introduction - statement of opportunity/problem/situation with accompanying literature and the significance of the study.

Purpose of the study and how it will be constrained by factors such as time, scope, data availability, knowledge and other considerations.

The research questions/hypotheses

Procedures - what are your assumptions for qualitative research, research strategy, your role in the research, how you will collect the data and how to validate it.

What are the anticipated ethical issues.Especially your collaborative role with your participants.

Preliminary pilot findings (when available) and expected outcomes.

Expected advocacy and or participatory changes.

Appendixes: Interview questions, observational forms, references

Quantitative Format Script

Introduction

Statement of problem/opportunity/situation and significance of the issue.

Purpose and constraints anticipated

Theoretical underpinnings

Research questions and or hypotheses

Review of literature

Methods

1. Type of research design
2. Sample, participants, and target population
3. Data instruments, variables
4. Data analysis procedures

Anticipated ethical issues

Preliminary outcomes and tests

Appendices: Instruments, references

Mixes Methods Format Script

Introduction

Statement of research issue, deficiencies noted from observation or literature. Explain the need to collect both qualitative and quantitative data.

Significance of the proposed research.

Purpose of the project

Research questions (quantitative, qualitative an mixed method questions)

Knowledge background assumed for this research approach (usually pragmatism). ‘

Literature review of the three approaches (qualitative, quantitative, mixed)

Methods - these will include potentially all from the three approaches.

Anticipated ethical issues.

Appendices: References and research instruments.

Options to Consider

The table below suggests what to keep in mind when you choose to work qualitatively, quantitatively or mixed.

TABLE 1. Linking Philosophy, Methods, and Techniques with Qual, Quant, and MIxed

Underlying ideas	Qualitative Approach	Quantitative Approaches	Mixed Approach
Philosophies - claims to knowledge --->	Constructive Alternativism Advocacy/Participative	Post Positivism	Pragmatism. 'Whatever works'. See C.S. Pierce 'Abduction'
Types of inquiry--->	case studies, narratives (e.g. story corp), ethnography, grounded research, phenomenology	Experiments, quasi-experiments, surveys.	Sequential applications of the various types of inquiry in an integrative context. Of course, concurrent research could be carried out as well.
Could use these methods--->	Open ended interviews, in-depth one on one. Multimedia analysis. Complexity is embraced and emergent issues accepted and incorporated into research agenda. Questions focus on how individuals ***construe*** their world in a given *context*.	Theory testing, hypothesis testing, specific questions with forced choices. Math analyses. Complexity reduced by focus on just a few variables with attempt to control all other variables. Concern with reliability and validity...	Combinations of the qual and quant approaches. Interleaved qualitative and quantitative techniques are used here with quant techniques used to suggest further questions and qualitative techniques doing the same
Could use these techniques--->	Personal involvement of researcher and incorporation of their values into the research. Close interaction and collaboration with participants.	Attempt to remain 'objective' in data generation, collection and interpretation. Using math tools to analyze and present. Simulation, computer program development	Combinations of qual and quant techniques along with a rationale for the mixing.

Part II - Discussion and Details

This purpose of this note is in three parts. I will suggest an outline for your thesis proposal, your annotated thesis outline, as well pointers to help you draft your final thesis chapters. For convenience, I have called these three work products (deliverables) a *Thesis Package*. As time goes on, I begin to see that this approach works also for a research paper. Even a 20 page paper needs the same type of components as a 120 page thesis, simply fewer components and less broad.

I have drawn heavily from university documents, although I have been selective. So, this document is *not the official thesis guideline* but my own take on how it could be done! Along these lines, I have incorporated my own experiences teaching this course a number of times as well as guiding my own thesis students.

I will describe my view of the components of a full fledged thesis (I will have some modifications to suggest as we go along). By components, I mean things like: Executive Summary, Introduction, Purpose, Research Questions, and so on.

Additionally, I will provide some background to the overall enterprise of research by supplying some notes on the basic approaches you can use when you actually carry out research, namely: Qualitative, Quantitative, and/or Mixed.

For your proposal, you will need one or two pages for each of the sections described below. For your annotated outline, you will need at least a paragraph for the Executive summary, Introduction, Lit Review, Research Design, Data Analysis and Presentation, Summary and Conclusion, plus those References that are called out in your proposal/outline. For your draft chapters, you will need all of the above plus expanded content. My perspective is that writing your thesis is an 'organic' process with cumulative deliverables that are subsequently reworked to be incorporated within the

next deliverable. This means that when chapter 2 is due, it is more than likely that chapter 1 and the executive summary will need some tweeks and updates as well.

> That's just the way writing, calculating, and research is, it's not a linear process, it is iterative, concurrent, and incremental! By *iterative* I mean that you need to *plan* on re-work - this will be necessary, guaranteed! *Concurrent* means that you will be cycling through all parts of your thesis, looping out to work on fragments of chapter 4, or 5 and then coming back to its supporting text in chapter 2 or 3. This will be going on all the time. *Incremental* means just that, the thesis can't be done all at once, so build that into your work plan. Plan to have a *deliverable* you can show anyone, at any stage. Use 'place-holders' or 'stubs' to indicate components you will develop later.

Before You Begin - Find Your Passion Points

I am going to talk here about the work needed *before* you launch into the organizing stage of the thesis process. What is most important before you even start preliminary work, is that you discover/identify and accept your **`passion points`**! I mean the areas of your life that you are attracted to, even if you are not rewarded for them. Finding these intrinsic attractions is what I call your passion points and, I think, determine both the likely completion of your thesis, as well as its quality. The importance of this self discovery/recognition is that researching and then writing a long document can get real tedious and, if you are not really interested, it can take forever (that's why so many many students do take forever, that is, *never* finish). Passion, directed by your intellect is the winning combination for thesis writing. (A little knowledge of the subject helps too)!

Good news -- I guarantee that your one of your passion points can be turned into a thesis! (and I do mean anything).

Example I: An information systems student is deeply interested in astrology -- o.k, how about constructing a web site that offers astrological advice? Thesis done!

Example II: A business student is excited about 1-on-1 marketing -- o.k., how about a sophisticated consumer interview technique that employs modern AHP analysis techniques (Analytic Hierarchy Process). Note, this AHP process is applicable to a very wide variety of question analyses. Thesis done!

Example III. A finance student is interested in understanding a certain class of financial instruments. Write up a multiple regression analysis, graph it, calculate it, explain it, and presto - done!

Thesis Concept Map

Below is a diagram of the same information as in the body of this document. Some people, like me, like drawings and diagrams. There is an approach to learning called *Concept Mapping* that takes the idea of drawing out concepts and their linkages, in a formal direction. For example, in the figure below, the research question would be linked to two distinct groups of concepts: the actual thesis chapter sequence, and the content of the thesis. such as resources, theory, my limits, and knowledge needed.

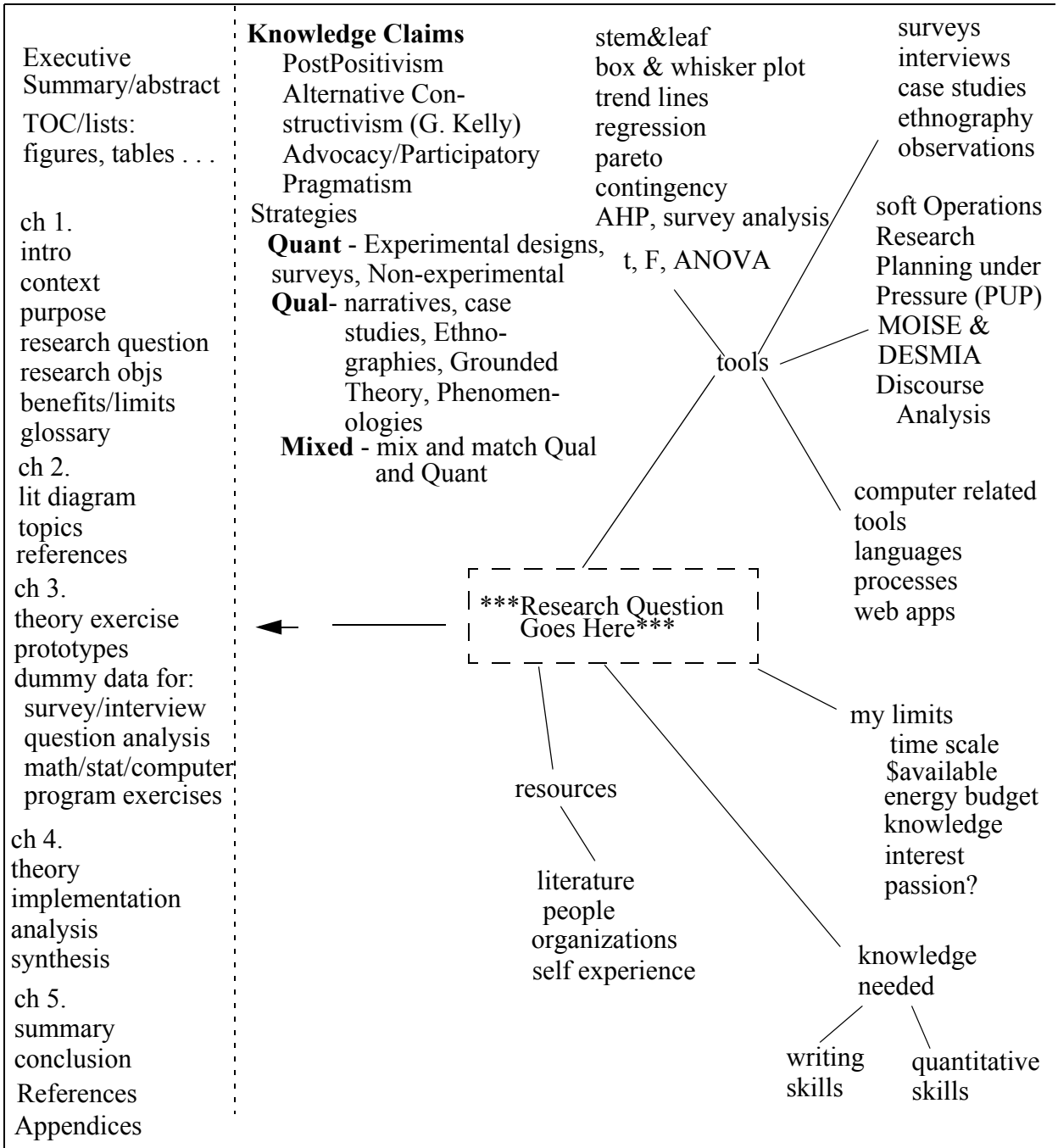

FIGURE 1. Diagram of Thesis Construction - C-Map

Mind-Mapping / Concept Mapping - to Lay Out Your Thesis

Before you put pen to paper it helps to do some preliminary work that will be revised and extended as you learn more. As I mentioned, your passion point is the source of all your creative efforts. For me, one of these point is my garden. Right now (August) I am preparing the beds for the fall planting and am very excited about all the wonderful veggies I'm about to grow. That's my passion. O.k., given this I am going to make a thesis out of it. To do that I need to be aware of some factors and how I will deal with them. Let me start with skills needed. In brief, I will need to know when and what to plant and how to care for each type of veggie.

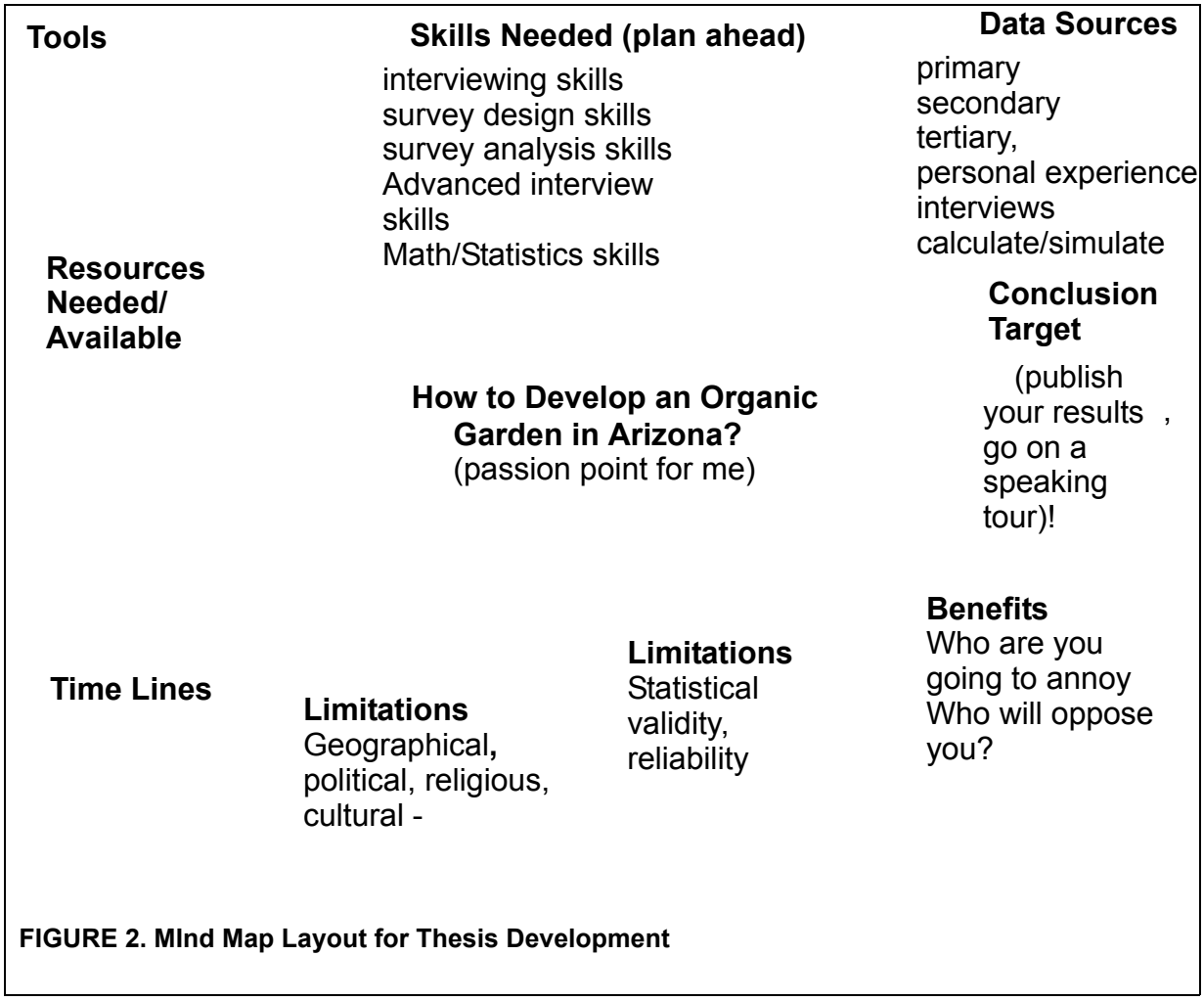

FIGURE 2. MInd Map Layout for Thesis Development

The Big Picture, the Thesis Structure

Here is the overall sketch of Thesis structure from which you can then cut down to a proposal, annotated outline, or expand into full blown chapters.

Abstract/Executive Summary - This comes before the table of contents and lists of figures and tables and is a 2-3 page summary of your study including the purpose, research questions, conclusions, and recommendations. Unless the reader is intrigued by your summary, they aren't going to

read farther. As you complete each chapter, it is a good idea to grow the executive summary along with your shifting ideas. Initially, just put in a few sentences as a place holder. As you do more, expand on these sentences (usually you will rewrite them as well). This is also the place to include a 'compelling' graphic. I know this isn't the standard advice, but think of your reader and their interests first. Wouldn't an insightful summary graphic be attractive to you?

Chapter 1. Introduction - introduction/context of research, purpose, area of focus, research questions, research sub-questions, benefits & limitations. Limitations also appear in chapter three when you are conducting your surveys, interviews, or doing some simulations or computing. Pay particular attention to the benefits of your thesis since that will make the writing a lot easier. Limitations include who is going to be antagonistic to your thesis conclusions. Will adopting your recommendations result in job loss, a prison in the neighborhood, disbanding a social organization? Every proposal will have its detractors, and so it is best to recognize that early on, and decide how to deal with it.

NOTE: an area of focus is something like, say, "Arizona Retail Mall Sales", that forms the context for your research questions. A research question, is just that, a question to be answered by your thesis. In the context of a "Retail Mall", you might want to ask "What are the most effective advertising venues to increase Mall sales". You will usually have sub-questions whose answers support your main thesis question. A context area can be described in text or even better, diagram what organizational structure you are going to impact (the MOISE diagrams are helpful here). A glossary is usually required in chapter one for terms the general reader may be unfamiliar with.

Note: if your thesis is any good, it will be read by an ever expanding audience. Assume that's the case and plan accordingly. This means giving your readers every aid to help them understand and appreciate your work.

Chapter 2. Literature review - this is an attempt to get up to speed with current knowledge in a particular focus area, plus any supporting technologies. This is a broad sweep over related topics with more and more focus on the areas you will actually integrate into your thesis. A diagram here is most helpful linking topic areas with references as well as providing an organizing pattern for your whole thesis (I insist on this diagram in my research methods classes). This diagram will most likely take the form of a hierarchy of subtopics with cross links. This chapter should introduce, in general, all of the theory you are going to subsequently use. A good perspective is to say that chapter 2 should *foreshadow* everything you are going to develop later.

Chapter 3. Research Design and Methods - narrows down the information introduced in the literature review and explores in detail the focal area and its' supporting theories. For example: What specifics about "Arizona Retail Mall Sales" bears on the research question(s)? Maybe you are going to introduce technology solutions as partial answers to your research question(s)? Perhaps you will suggest using Java web services with mobile access to allow customers to look up Mall information in real time? So, the technology should have been introduced in chapter 2 and now you will specifically describe how you will use it in your research. This chapter gives examples of the technology you are actually going to employ.

Chapter 4. Now you actually apply the theory described in chapter 3 to the focus area to answer research questions. For example, this is the chapter where you actually administer and analyze the surveys you have described in chapter 3. This is the area where you carry out the regression equation analyses and syntheses. This is the actual as opposed to the theoretical, data generation/data collection section as well as its analysis. Data is used in a broad sense since it can be verbal opinions as well as something like a numeric time series graph.

Chapter 5. Conclusions & Recommendations. Conclusions (often called the summary) are what

you accomplished, recommendations are where you can go from there.

Appendices - references, code, survey samples, additional tables and charts.

Thesis Detail

Executive Summary

This comes before the table of contents and lists of and is a 2-3 page summary of your study including the purpose, research questions, conclusions, and recommendations. This is a summary for your reader as to what they can expect from the body of your thesis. Are there important conclusions that you can bring to the attention of your reader, important questions that ought to be raised in your readers mind?

Think about a newspaper article whose title or first two sentences just compel you to read further. Your summary should be like that, compelling. A good idea is to 'grow' your executive summary as you complete your chapters. For example, at the end of your first three chapters, you ought to have a summary of those chapters that tells where you are so far.

Chapter 1.

Introduction- this is the part where you really engage the readers interest so that she wants to go on and find out what more you have to say. Why is your research of importance? What compels you to go and do all of this work? What is the context of this work?

•Opportunity/problem/dilemma/inequity/injustice that you have recognized and are interested enough to do something about!

• The Purpose Statement - Here is a statement of why you are doing this. Notice that the Opportunity/ Problem is not the same as the Purpose of your research.

• Research Questions and Hypotheses - these are questions that you would like to give answers to.

• Research Objectives - what are the goals/steps needed to answer the research questions?

- How are you going to proceed - qualitative, quantitative, mixed research?
- Given one of the above approaches, how will you then proceed?

As a help to your reader, I suggest placing overview diagrams even in chapter one. A MOISE diagram is often very helpful to describe the focus of the research and the embedding organizations that influence your work.

Benefits

Who is affected by your work (Stakeholders). Who benefits from your work, who is downgraded? What population does your work apply to? This is a very important section since it justifies all the work you have put into this (or will put into it).

1. Technical benefits
2. Your organization's benefit
3. Benefits to other similar organizations
4. Other sectors of your industry that will benefit
5. Local benefits

6. National benefits
7. International benefits
8. Impact on Social, cultural, religious, philosophical mores
9. Your personal benefit (job, professional, personal pride/accomplishment, prestige, spouse or significant other now loves/respects you more...)
10. Your extended family benefits ("I am the first in my family to write a thesis"!)
11. This thesis will enhance my E-Harmony profile!
12. Legal benefits
13. Short term/long term benefits (your work might be an important start or continuation of a long term goal)
14. Perhaps noting other people who will benefit, even if indirectly (these might be called stake-holders)

Limitations

As much as you would like complete freedom, there are limitations to your efforts, both internal and external. Here is a short list of limitations you may encounter, gathered from the souls before you!

Your Limitations

- Once you have your research question, where to find the people or organizations to study? Hopefully you already have a good idea, but, it's surprising how hard it is to get interviews with CEOs or foreign executives!
- Associated with the first bullet, how to find a sufficient number of interviewees, that is, what sample size do you need in order to infer reasonable conclusions.
- Along with interviewing, there is the constant problem of bias from both the interviewer and the interviewee. Interviewees want to look good, and the interviewer wants them to.
- Time to do the research of course, along with limited funds.
- Your lack of knowledge to carry out a particular type of research. For example, multi-criteria analysis is often indicated, but lack of knowledge closes this important theme. So, I think it's important to anticipate the kinds of technology/skills you might need, and prepare for them. Hopefully your course work will go some ways toward this goal.
- What are the limitations to your thesis. How general is it? Do your results apply just to a particular group of people, to a department, to an organization, to a collection of organizations, to an industry, to a sector?
- Who might be an enemy of your work or who would be 'injured'? This will occur if you do an "Advocacy" type thesis on an unpopular topic (everything is unpopular to someone). Some people will not like your conclusions or recommendations. It is well to be aware of this early on. In fact, if you do work that would eliminate a job category, you might receive some negative responses both from displaced employees as well as the powers that be who not like your re- structuring! Who else might consider you a threat?
- Will your work give some group a competitive advantage and if so, what will competitors do? Institute legal proceedings against you or your organization?

Their Limitations

- The people you deal with have limitations for sure! What are they?
- Simple lack of knowledge of what they are talking about -- sheer ignorance, or just out of touch with the substance of your questions.
- Self flattering/ self enhancing reports from your interviewees.
- Downright falsehoods
- Politically inconvenient answers
- No response to requests (this is the most common complaint)

Ontology/Glossary

What terms used in your work will be unfamiliar even to educated readers? Don't assume that someone in your field will be reading your thesis, so explain what you mean.

Chapter 2. Literature Review

These are the knowledge bases that you will build upon. The theories you will use to answer the research question must be covered here. Be careful about your sources here. Here is my take on the credibility of sources:

- Your own primary research
- Private communications to you from primary sources
- Refereed journals both in print and on-line
- Encyclopedias, dictionaries, text books
- Internet access to the above.
- Journals
- Trade publications
- Internet blogs and Wikis on Major Areas to be Covered

Be sure to cover the focus area as well as the theories you will be invoking to answer the research question. That is, if your focal area is "Retail Mall Sales" then you should thoroughly research this area. If you are going to develop a business process to improve retail mall sales, then be sure to research the different categories of processes that might qualify. In other words, cover the industry, or the population you will later go into depth about.

A *diagram* is most helpful here, as it will direct your efforts for the rest of the thesis. This is a hierarchical diagram of your topics that you will cover. You could even place the actual references at the tips of the topics.Use this diagram to organize your text sequence. I have found this helpful since otherwise, the text reads like a James Joyce stream of consciousness!

Chapter 3. Research Design & Methods

Here is where your approach is laid out. What theories are you going to use and how are you going to use them? In chapter 2, the literature review, you should have introduced these in general, and now they must be specialized to your specific task at hand. It's like you have described a general tool box of wrenches, hammers, or perhaps power tools and now you are going to say how they will be applied. Note for chapter three, you can use dummy or made up data to illustrate your the-

ory, in fact, that is a good idea just to get a feel of how it will look when you actually use live data in chapter four.

(For the IT people it is a bit easier since they will be writing some kind of person-machine interaction, such as a web service, an inventory control program, web site, document manage4ment system, mobile app, or perhaps a business application). Now you apply your development process to come up with a research design. Qualitative, Quantitative, or Mixed.

If you were doing surveys/interviews, you would describe the questions to be asked, their format, and tentative analyses. For each question, write out how that particular question supports the answer to your research question or one of its sub-questions. Remember, you don't yet have actual responses (or at least, I don't assume that you do).

For example, what would be a reasonable sample size to take, given the error you are willing to tolerate. If you were going to do a simulation, you would describe the equations to be used and document their usage. If a regression analysis, here is where you would show your equations and proposed data sources, using perhaps dummy or prototypical data sets.

If you were going to be doing a focus group, you would describe how that group interaction would be managed.

- For people doing interviews or surveys: include the questions you are going to use in the survey/interview and, for each question, describe *how* that question relates to your research question.
- For people doing simulations, calculations, statistical tests: examples of such procedures go here, using dummy or made up data, or real data if you have it. For example, if you are doing a regression analysis, show what variables you are going to use, and how you are going to predict one from the others.
- For all of the quantitative tools you are going to apply to real data in chapter 4, show examples in chapter 3. Here is a list of some of the tools you will be exposed to in RES 603 (at least in my classes:-))
    1. Stem & Leaf Plots - show how any batch of numbers are distributed (an improved histogram technique)
    2. 5-Number Summaries and Box & Whisker plots - semi-graphical view of any batch of numbers as well as comparisons between batches.
    3. Trend analysis with Box & Whisker plots - an easy way to show the direction your data is going. You can do time-series with these tools.
    4. Pareto charts/plots - organizing categories of data in order of importance. A blindingly simple technique that is very useful.
    5. Contingency tables - can you tell is there is gender bias with respect to pay scales? Contingency tables are a way for you to discover connections like this in your data sets (so long as you plan for the questions you are going to ask!)
    6. Organizational structure - MOISE & DESMIA diagrams. If you want to show your reader the organization structure you are working to improve or change, a picture is in order. (This is complementary to an org chart).

7. Discourse analysis - explore and diagram your interviewee's reasons for their statements. Don't just ask for an opinion, ask also the reasons for it! This is a general approach to textual analysis. This approach allows you to discover or display the reasoning inherent in a discourse (a coherent text).
8. Survey analysis - how many people do you need to be within a specified error?
9. Likert scales showing gradation of opinions. Use with AHP for a multilevel analysis of opinions.
10. Analytic Hierarchy Process (AHP) extends the Likert scale rankings and allows multilevel decision analyses together with a quantitative measure of judgmental consistency.
11. Various statistical tests you can apply to your data, again, only if you set up the right questions to ask early-on in your research.
12. Multiple Regression is a surprisingly easy and powerful technique to introduce into your thesis. I have a few tutorials on the subject and there are a ton of other resources.
13. I have done some work in Exploratory Discourse Analysis that describes ways to analyze textual material to extract its argument content.

So, within the focus area of your thesis topic, these are the theories that will be employed to answer the research questions. This is the section that will detail any surveys, questionnaires, interviews that you are going to administer as well as prototypical calculations of all the quantitative tools you are going to use.

Survey Notes

What's In It For Me

As a light hearted addition to these notes, here is a list compiled from one of my research classes when I asked: what could you include in your survey introduction to induce people to fill it out?

- .Promise to send survey results/ Get immediate results (check if this is feasible for you survey software)
- .Intrinsic Interest "I want this whatever to happen and if filling out a survey helps, I'll do it"
- Possible inclusion (Status, Prestige, T-Shirt, Gift Certificate, Coffee Mug)
- .Help the ORG to be effective/survive
- You have my thanks
- .You may be influential (have an effect, you will make the difference by filling out this survey)
- Personal Support/ avert pain
- Gifts: money, food, drink, product (source code from one researcher)
- I will get better service if I fill out this form ☺
- Potential for networking
- Compulsion

Survey Tips

- Attach or insert a glossary or a short explanation of terms. Place the respondent in the proper context.
- Virtually state your research question at the top of the survey/interview since every question should bear on that question.

Chapter 4. Data Analysis & Presentation

(Application of the Topics of Ch. 3) This shows how you used the theory described in chapter 3 in service of answering the research question(s). You are expected (my students for sure) to at least present descriptive statistics (in current terms this means Exploratory Data Analyses (EDA)).

Here is where you exercise your theory as applied to your focal area. Here is where the computer program is demonstrated, the simulation program run, or the results of the focus group collected and analyzed. Data presentation and data analysis/synthesis is featured prominently here: Data presentation shows the data in a user friendly/informative/honest way (no pie charts please!). Note that many times you will be using publicly available data in your thesis. What are you adding of value? Here is where you might be able to claim that your analysis of the data is unique or that your presentation is particularly/uniquely appropriate for a certain category of reader. Don't produce an "infomercial" thesis.

Chapter 5. Conclusion & Recommendations

Write out your answers to the research questions here and then go on to describe what should happen next.

Conclusions (Extended Summary): A page describing what you did and how it came out. Here is where the benefits section should be iterated to show how your work actually did benefit some stakeholders. This would be a good place to state your understanding of any negative effects implementation of your thesis might have.

Recommendations: What should happen next? What ought you to do and what would you recommend others to do? Would you suggest a longitudinal study, to be carried out by perhaps the next generation of grad students? Should your study be expanded to other sectors of the industry, or perhaps a more in depth investigation is in order?

- Appendices
- References
- Code, programs
- Surveys

Writing/Presenting Thoughts *** under construction!***

The writing process itself, some general thoughts. This might seem like belaboring the obvious, but let me start with a few observations, given that you want to write something--

1. *Self-Authorize* -- you don't need anyone else to give you permission to accomplish something! Go ahead, authorize yourself to accomplish whatever.

2. Pick topics that you are passionate about, or at least very interested. If you don't, you will find a way to not finish (I know all about these self-sabotaging routines, I can draw on any number of them myself, anytime!).
3. Once you have a topic in hand, then what do you want to do with it? - explain, describe, inform, exhort, implore, analyze, synthesize, hypothesize, pontificate, chastise, remonstrate, show-off, or what?
4. Know yourself first, and then know your audience. What will move them, interest them and cause them to respond as you intend?

Presentation Tips

Ok, suppose you have your thesis 'done', congratulations. Now it's time to make your hard work and research skills audible, visible and maybe even kinesthetic. You want to showcase all those startling conclusions, informative tables&charts, as well as insightful calculations that you have created/discovered. You want to present your results to the rest of the knowledge-hungry world in a way that will encourage them to believe and accept what you say. Along the way, a few well-deserved 'strokes' of approval would be nice.

Hopefully, you will be able to publish parts of your thesis and its conclusions in a journal, magazine, or perhaps a company newsletter. In any event, if you have done quality research you will have something to say and show worth many other peoples' consideration. In this section, I plan to only discuss with you your 'end of thesis' presentation, the one where an audience of your peers or perhaps a few outsiders, get a first look at your finished product.

I have a number of tips along these lines that I would like to offer, after sitting through scores of talks and presentations. There are a number of ways you can annoy an audience during your presentation, and I will cover a few below but first, let me tell you what I have noticed/discovered.

Practice not Saying "Uh"

Filling space with "uhs" is common but very distracting. You are selling your competence and verbal litter messes it up.

Be Aware that you are Selling Something

Even if you are incensed or even enraged by the perception that you are a "salesperson", rest assured, you are! In the case of written material, you are selling *perceived competence*.

Be Mindful of Human Perceptual Paths (don't muddle the pathways!)

There are several pathways to the human brain through our 31 pairs of external nerve sensors: hearing, vision, taste/smell, kinesthetic (body motion). It turns out that there are two separate path ways associated with hearing and vision. This becomes important when your presentation uses these two paths at the same time for the *same data*. If you read the slide presentations text sentences, (hearing path) as well as show them on the slide (vision path), you are mixing up the two pathways, hearing and vision. Instead of complementing each other, this dual presentation of the same data causes annoyance in a person due to trying to untangle which pathway has priority and needs to be attended to.

Solution: Keep the Hearing and Vision Pathways Separate

Talk about your slide, that's fine, and at the same time, show a graphic (chart, equation, picture, or

diagram). Don't read the slide sentences since the reader is likely to say: "I can read, why are you doing this to me?". Or, "just send me the slides and I will read them myself".

Creating/Constructing Your Presentation

1. Consider your audience - who are you trying to sell to?
1. Write a script of what you are going to say. A script is the organizing document so that everyone, (mostly you!), are on the same page. A script is what Hollywood starts with since how it's acted, visualized, and embellished allow infinite variety.
2. Stroryboard - expanding your script to include notes about how it is going to be 'realized'.
3. Diagram or image to accompany/component of storyboard.

Upgrading Slide & PowerPoint Presentations

Theses Bases - Knowledge Claims

•Positivism/Postpositivism claims

•Constructivism knowledge claims

•Pragmatism knowledge claims

•Advocacy/Participatory knowledge claims

Types of Research Approaches

Fundamentally, there are three equally valuable approaches to research -- Quantitative, Qualitative, and Mixed. As you can guess, the mixed approach uses both the Quantitative and Qualitative methods in an iterative, incremental, and concurrent mode. I will spend most of this discussion on the qualitative approach since the quantitative approach is already fairly well known. The mixed approach incorporates both qualitative and quantitative and seems to me to be always used, although it has been explicitly recognized by academics only within the last 20 years!

Qualitative Research Characteristics

I have adapted/revised this list from (Creswell, 2003) who describes this set as characteristic of qualitative research.

Qualitative research often is done in-place, in natural settings, disturbing the environment as little as possible. Think of the anthropologist living among the natives of New York city, observing everything about their comings and goings. That is, the researcher travels to the subjects: office, farm, factory, street, battlefield, or dinner table and observes/participates. A major characteristic is the detail obtained by the researcher, definitely a 'hands-on', personally involved perspective. One could characterize this as a *Taoist* approach in which the researcher immerses herself in the area of focus.

Qualitative research is above all *humanistic*. There is an explicit recognition that both the research-

er and the subject are 'in this together'. All data is fair game to be collected, not just yes/no survey question responses but sights (pictures, video), sounds, text, electronic representations of all kinds, and even people interactions. Another way to say this is that the researcher is the recording/participating instrument, rather than a mechanical one. (Of course, Mixed Research uses measurements from multiple recorders)

Qualitative research is dynamic. You don't assert hypotheses to be proved/disproved ahead of time, or if you do, be prepared to amend them! You don't know ahead of time what you will find, in particular and maybe you can't even predict or control what outcomes will emerge. This is a common occurrence with biological systems, they don't conform to arbitrary rules. As the research proceeds, you may need to change direction as a more promising sector of experience appears.

Qualitative research is filtered through your mind as an investigator. That is, you are going to construct the results as a consequence of your particular life experiences. This personal perspective actually is part of every research effort, it is simply that the qualitative approach raises this obvious observation to a defensible academic level.

Qualitative research acknowledges the multitude of interconnections of your observations with other processes. If life is a process, as (George Kelly, 1953) asserts, then my process, your process, and everyone else's processes are interacting constantly with both overt and covert consequences.

Common Qualitative Traditions

In the set of criteria above there will be found most of the specific approaches listed below:

Ethnographic Research - this arose from anthropology where emphasis is on discovering the whole culture of an intact group. This is done by embedding oneself within the culture to be studied, to become one of them but still keep that observational eye cocked and ready to fire. This is definitely *self as instrument*.

Grounded Theory - the plan is to construct a theory from the 'ground up', based on the views of the participants in the study. Bob Dick bdick@scu.edu.au, has an online tutorial on Grounded theory. A bit of his perspective is reproduced below.

> "Grounded theory begins with a research situation. Within that situation, your task as researcher is to understand what is happening there, and how the players manage their roles. You will mostly do this through observation, conversation and interview. After each bout of data collection you note down the key issues: this I have labelled 'note-taking'.
>
> Constant comparison is the heart of the process. At first you compare interview (or other data) to interview (or other data). Theory emerges quickly. When it has begun to emerge you compare data to theory.
>
> The results of this comparison are written in the margin of the note-taking as coding. Your task is to identify categories (roughly equivalent to themes or variables) and their properties (in effect their sub-categories)"

Case Studies are an in-depth exploration of some process, entity, situation, or individual. This is essentially a descriptive study that could be the basis for other conclusions or hypotheses/ questions.

Phenomenological research is defined by the Stanford Encyclopedia of Philosophy as follows:

> The discipline of phenomenology may be defined initially as the study of structures of experience, or consciousness. Literally, phenomenology is the study of

> "phenomena": appearances of things, or things as they appear in our experience, or the ways we experience things, thus the meanings things have in our experience. Phenomenology studies conscious experience as experienced from the subjective or first person point of view. This field of philosophy is then to be distinguished from, and related to, the other main fields of philosophy: ontology (the study of being or what is), epistemology (the study of knowledge), logic (the study of valid reasoning), ethics (the study of right and wrong action), etc.
>
> Phenomenology is the study of structures of consciousness as experienced from the first-person point of view. The central structure of an experience is its intentionality, its being directed toward something, as it is an experience of or about some object. An experience is directed toward an object by virtue of its content or meaning (which represents the object) together with appropriate enabling conditions.
>
> Phenomenology as a discipline is distinct from but related to other key disciplines in philosophy, such as ontology, epistemology, logic, and ethics. Phenomenology has been practiced in various guises for centuries, but it came into its own in the early 20th century in the works of Husserl, Heidegger, Sartre, Merleau-Ponty and others. Phenomenological issues of intentionality, consciousness, qualia, and first-person perspective have been prominent in recent philosophy of mind.

Narrative research is a person focused approach where the investigator extracts 'stories' from the participant and is reorganized by the researcher in to a flowing narrative of that individuals life, together with the investigators stories. A contemporary example of this the Nation Public Radio's "StoryCore". People tell their stories at collection points and these are re-broadcast as part of a narrative within a theme.

Quantitative Research

Quantitative Research, by far the most common approach, is the time honored procedure of setting up hypotheses using as few 'independent' variables as possible, to conclude some limited outcome as a consequence of those independent variables. Within this tradition is found all the math, quantitative decision making and statistics you could ever want to know about. Below is a tool box you may want to draw from. Notice that it is a requirement (mostly my own sense of what is most valuable!) of the annotated chapter outline that you at least present EDA statistics. I have created tutorials on each of these tools that I will introduce as the class continues.

- EDA - exploratory data analysis covers the initial 'look' at any set of data. This approach (not really a tool, but more of a perspective) attempts to display, in a forceful way, what might be overlooked by a casual examination of data. This approach helps to point you in the right direction for further work.
- Trend analysis (Time series) - a study of what happens over time, with a view toward predicting a likely outcome during future time periods. This perspective can be extended to a Least Squares analysis with all the calculus bells and whistles, as needed. An alternative approach is to look at this process geometrically. From that perspective all of the trend analyses and regression analyses can be done by geometry.
- Survey design - how to set up surveys and interviews.
- Survey analysis - deciding on number of samples to take to ensure an acceptable margin of error for both proportion questions as well as 'Likert' type questions.

- Pareto charts - graphs of the most important factors in a study, and their cumulative impact. For example, for customer errors when filling out different types of forms, plot errors versus types of forms, from most errors to least. This gives a rationale for setting correction priorities.
- Contingency tables - a first look at deciding if variables are related to each other or are independent. For example, does motorcycle rider helmet color correlate to number of fatal motorcycle accidents, (yes!)
- Analytic Hierarchy Process (AHP) - a more comprehensive and defensible way to rate and rank alternatives within the context of selected criteria.

Sample Thesis Topics

Here are a few recent thesis topics that I have been involved in: I have noticed how hard it is to pin people down to a clear concise question. Formulating the question is a major advance in your thesis work, so trying out lots of potential questions is a really good idea.

1. How has proposition 13 affected California, and how would a similar acquisition based tax system affect Arizona? Tools: Natural reasoning regress ion analysis trend lines
2. Is Plea Bargaining an efficient approach in the administration of justice in the criminal justice system of arizona?: Tools: AHP, Stem&Leaf plots MOISE, contingency tables regression
3. How do women in Arizona Law enforcement organizations perceive their position and pay trajectory?
4. Does the maricopa county juvenile probation department properly identify treatment needs of juvenile offenders?
5. Of the three events, Super Bowl, FBR, Nascar, which is most profitable?
6. How can I develop a decision framework in which to decide questions such as “Should Arizona privatize women’s prisons?” “
7. Should a municipality have a code of conduct for private organizations that utilize public facilities?
8. What is the effect of a truancy preventions program on absenteeism rates, suspension rates AIMS scores, recividism, and juvenile crime rates?
9. Do parks and openspace areas have a positive or negative impact on the communities they serve?
10. How to construct a decision framework for centralization versus decentralization questions within the stevedoring industry?
11. Do charter or district school students score higher on the AIMS tests, (3rd grade reading and 8th grade math)?
12. What are the current best practices in water resource management in Arizona (from the perspective of water providers)?
13. What are the perceived effects of leadership styles of commercial retail property managers on their assistants.
14. How does the leadership style at Beryl, a Texas company, impact employee engagement at work?
15. How to construct a purchasing protocol and recommended strategies under various constraints?

16. Does your sense of smell have a memory?
17. What are the key drivers that limit the advancement of women in technical roles to leadership positions, in technical companies?
18. Are exchange traded funds a viable investment for the smaller individual investors as compared to open-ended mutual funds and individual securities?
19. How can the current behavioral health system be changed in order to provide quality care for all who need it?
20. How can Avnet (an electronics distributor) differentiate itself from the competition as the industry moves toward a service based business model?
21. What programs can be developed to prevent loss of employees when they return from their foreign assignment?
22. Will utilizing the LIMEX (a catholic management program) development program produce adequately trained and committed volunteer leaders who bring growth and sustainability to St. Roses Catholic Parish?
23. How can the ERP team improve current training materials and assess their effectiveness?
24. What are the emotional needs of undocumented teens in Maricopa county?
25. How to design public websites that cater to the needs of citizens on the other side of the digital divide?
26. Does personal use of technology in the work place decrease stress?
27. What is the effect of implementing a preschool Fine Arts program?
28. Does the Tempe Parks and Recreation need a comprehensive outreach plan?
29. Have Tempe multi generational cultural centers met public expectations?
30. How does excessive overtime affect police department clerical employees?
31. How can Boomers be attracted to volunteerism?
32. Which Sarbanes-Oxley-like provisions should be applied to the operations and financial reporting of the activities of the Government of the State of Arizona? [2008]
33. Why do we continue to have communications and interoperability problems amongst first responders to disasters?[2008]
34. Can the Adoption of Automated Testing Software Benefit State and Local Governments with PeopleSoft ERP Systems?**[**2008**]**
35. Does identity theft undermine public confidence in using e-commerce? **[**2008**]**
36. Is there a general desire by county government employees to work one or more days a week from home?[2008]
37. Is open source software a viable alternative to proprietary software in a public school district?[2008]
38. How can a proof of concept be developed for text based communication software based on ad-hoc methodology? [2008]
39. What are future impacts of electronic data distributions such as Kindle? [2008]
40. What can educational indicators tell us about the educational needs for Arizona?[2008]

41. What are the Asian and Caucasian perspectives on the benefits of nutritional non-fat dessert dairy products?[2008]
42. What advertising plans are attractive to different Personal Injury client populations?[2008]
43. Has the Sarbanes Oxley act accomplished its goal of increasing transparency and disclosure of financial information? [2008]

44.

TABLE 2. Thesis Topics

Key Words	Question	Description
privatization, middle east	How can privatization help Lebannon to achieve Paris II goals?	Khodr El-Jobeli (2008) uses AHP
unions	Should organizations employ unions to improve their and employee relations?	Onesimo Padilla (2008)
group homes	What value do group homes have as a treatment program within the juvenile justice system?	Beneka Brown (2008)
default loans	What methods of default management result in the lowest cohort default rates?	Ismael Cantu (2008)
financial, CSR	**How do advancements in technology impact the skill-sets of customer service representatives in retail banking?**	**Dwight Evans (2008)**
mortgage	**Is one particular loan more responsible for the current crisis?**	**Deborah Lee**
africa	**To what extent has regional economic integration helped the east african community achieve their development goals?**	**Christian Masawe**
marketing	**What are the priorities among the factors that influence Indian consumer sportswear purchase decisions?**	**Rohit Prashar (2008)**
animals, dogs	**Can the number of dogs being relinquished to shelters be reduced by**	**Amy Brown (2009)**
women, India, China	**What impact can women have on the economies of India and China**	**Annette Reabold (2009)**
personality, performance	**What personality types lead to success in a financial services environment***	**David Puckett (2009)**
monopoly, steel	What Would Be The Economic Impact to The Local Phoenix Area Caused by A Global Steel Monopoly?	
Incentives	**How to match incentives to employees in the civil engineering profession**	**Jeff Wimmer**

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Key Words	Question	Description
Arms Sales, Asia	What are the competitive barriers to direct commercial sales of military defence articles to Japan, Taiwan, and Singapore?	Mike Marble(2008)
Credit Bureau, Philippines	What are the factors to consider for a successful establishment of a credit bureau in the Philippines?	Edward Cantu (2008) uses MOISE
unions	Should organizations employ unions to improve their and employee relations?	Onesimo Padilla (2008)
group homes	What value do group homes have as a treatment program within the juvenile justice system?	Beneka Brown (2008)
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References

Cresswell, J. (2003) *Research Design Qualitative, Quantitative, and Mixed Approaches*, 2nd ed. Sage Publications, ISBN 0-7619-2441-8

Bob Dick bdick@scu.edu.au

Kelly, G. (1953) *Personal Construct Theory*, Prentice Hall

Maslow, Abraham (1970) *Motivation,* Sage Publications

Novak, J. and D.(1984) Gowin, *Learning How to Learn*, Cambridge Press

Rucker, Rob (2008) *milagrosoft.com*. personal web site of the author

Strunk, W. and E. B. White, (2000) *Elements of Style*

Notes to new classes

Hello all, rob here, attached is the syllabus for our upcoming class as well as the directions for file submission to me via e-mail. I would like you to follow this syntax. (one student has already done so).

In general, send email to robr@fastq.comTake a look at the syllabus and then be prepared for a give and take session to start off with.\I always ask each class member to do a 4-5 minute standup, at the board, in front of the class about your topic.

I will ask you to write your RESEARCH QUESTION, (or your tentative question) in the middle of the board and then go from there.

Ultimately, your thesis must convince an educated reader in your field that the research question is answered, so start with this presentation!

A very good idea is to make sure that your research question encompasses one of your passion-point(s). What I am saying is that unless you are passionate about your topic, the chances are less than zero that you will complete it (trust me!)

There is some flexibility at the start of this course that you might want to take advantage of. That is, this is the last chance to change or tweek your thesis direction/research question. I will refer to my web site for relevant material as the course progresses, take a look. milagrosoft.com this is also called the 'sunflower site' (milagro means 'miracle' in spanish and, as it turns out, I live on mi-lagro ave in mesa. Call me if you have some burning issue

480 332 9798 (cell)

NOTE: there is a way to forward your WIU mail to your private mail account, that is a good idea since I do all my communication with you via email.

cheers

rob r.

Thesis Cumulative File Submission Format:

To: RES class members From: robr@fastq.com

HI all, I want you to think of your thesis as nearly completed, with just a bit of additional materials and thought to be inserted:-)

Submit by email to me your current thesis in a "single, cumulative" file. To my email address:

robr@fastq.com

Include your advisors email as part of the "CC" addressees so I can easily keep them in the loop. This file submission should include:

0. WIU title thesis page

1. Executive Summary-- at least put your research question in here and progress toward answering it

2. TOC -- at least the headings should be inserted (depending on your completion status)

3. Ch 1 --detail should be shaping up here.

4. Ch 2 --lit review

5. Ch 3 -- you should expand on the theory you will be using here.

put in markers/ place holders where you are going to insert info later

6. Ch 4 "" -- actual data analyses here

7 Ch 5 "" -- Summary and then your Conclusions/Recommendations

Appendices

References -- start/ continue to insert your text references here.

Each chapter starts a new page with a centered bold heading...

****

Start your file name with your initials (don't start with a number)

The word 'Thesis' should appear in your file name No spaces or punctuation in file names are allowed

End your file with the date of submission, for example: (Use year, month, day format, otherwise its ambiguous)

RHRThesis20081108.doc (I can read open-office-docs, Framemaker, RTF, Word docs as well)

This will be an all-in-one cumulative file to which you will add additional material and revise previous material. The idea is that you can see where your current work fits and you can go back and forth between chapters/sections, revising as needed. Remember, writing is always Iterative, Incremental, Concurrent, and Recursive.

Note: If you can't bear to delete words you have written (as I can't), just place that text at the end of your document in a special section.(I call my such section "Extra verbiage")

cheers

rob r

If you submit something and I don't get back to you within a week, then email me for sure.....!!! :-)