Theory

The Missing Link in Successful Student Scholarship

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Since 1998, the capstone papers of students at Texas State University have won the Pi Alpha Alpha masters student paper award five times[1]. The papers are so successful because students have mastered the art of building and using intermediate theory or conceptual frameworks. This paper introduces the notion of micro-conceptual frameworks and examines how students use them to connect all aspects of empirical inquiry (e.g., problem definition, purpose, literature review, methodology, data collection, and analysis). These conceptual frameworks act like a map that gives coherence to the enterprise. They are a critical "missing link" in successful student empirical research.

Capstone Project

Our MPA students learn about conceptual elements of empirical research as they prepare to write their Applied Research Project (ARP). The ARP is written in a two-course sequence. The first class (POSI 5335 Problems in Research Methodology)[2] is a

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[1] The actual Capstone papers or Applied Research Projects run 50 to 100 pages. The Pi Alpha Alpha papers are shorter versions in keeping with the 20-page limit. Most Capstone papers written since 2001 are available at http://ecommons.txstate.edu/arp/ . This website also contains abstracts and titles for the capstone papers since 1992. The Texas State University library has catalogued all ARPs dating back to the mid 1970s.

[2] See http://uweb.txstate.edu/~ps07/sy35fa99.htm for the syllabus of POSI 5335 Problems in Research Methodology.

research methods class that emphasizes conceptual elements of research. Students are required to find their topic, specify a research purpose, write the first draft of their literature review chapter, construct a conceptual framework, operationalize the conceptual framework and present a prospectus[3]. In the oral presentation of the prospectus they are required to share their research purpose and construct the two conceptual framework tables that are the focus of this paper. The first table links their conceptual framework to the literature and the second table operationalizes the conceptual framework.

In the second course (POSI 5397 Applied Research Project)[4], the students act independently. They are expected to submit a written prospectus (with the purpose statement and conceptual framework tables included), collect, organize and analyze the data, write and defend their paper in an oral examination. The conceptual framework tables developed for the prospectus are included in the literature review and methodology chapters[5]. The operationalization table directs the organization of the results chapter and a summary table drawn from the conceptual framework is generally found in the conclusion chapter. Given the importance of the conceptual framework tables in the overall process, this paper emphasizes how the tables are constructed, how they make theory more explicit and how these tables act as links that connects all aspects of the research process. Examples of student work illustrate these connections.

Conceptual Frameworks

This two-course sequence was initiated upon the suggestion of a NASPAA site visit accreditation team.[6] The Applied Research Projects were cited as a weakness of

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[3] See http://uweb.txstate.edu/~ps07/prospectus1.htm for the prospectus requirements.
[4] See http://uweb.txstate.edu/~ps07/sy97fa99.htm for information on POSI 5397 Applied Research Project.
[5] The information is always presented in table form somewhere in the ARP. Sometimes these tables are in chapters with different titles.
[6] At the time, students were required to complete two applied research projects. POSI 5335 replaced one of the required applied research projects.

the program. In particular, the team noted the absence of coherence and conceptual frameworks in the papers. The first course (POSI 5335) was created to address these and other problems identified by the team. Our approach to methodology explicitly recognizes that conceptual frameworks are challenging for students to understand, develop and use. That is why we concentrate on the more concrete and narrowly defined micro conceptual frameworks. Micro-conceptual frameworks link to the specifics of controlled empirical inquiry. These are the detailed frameworks associated with the concrete problems of policy and management.

Philosophic Approach to Theory

Our approach to teaching about the role of theory in empirical research is explicitly guided by the ideas of Abraham Kaplan and John Dewey. Kaplan's (1964) sense of methodology incorporates a logic-in-use that focuses on the "problem at hand" and carefully considers conceptual aspects of empirical research.[7] Dewey's instrumental view of theory is particularly useful because it treats theory as a tool to structure inquiry.   When theory is approached as a tool (rather than truth), MPA student/practitioners are better able to see theory's relevance and usefulness. Our students learn about the "theory as tool" approach to empirical inquiry as they are faced with the challenge of writing their capstone projects - the Applied Research Project (ARP).

Kaplan also maintains that the traditional "hypothetico-deductive" method of inquiry associated with behavioral science methodology (and logical empiricism) is problematic because "most of the important incidents in the drama of science are enacted behind the scenes" (Kaplan 1964,10). Kaplan views theory as too often in the

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[7] His *Conduct of Inquiry* is considered a classic in methodology and draws heavily from Dewey's (1938) *Logic: The Theory of Inquiry*. Kaplan also draws from William James and Charles Sanders Peirce.

"shadowy background" or "ghostly in appearance." Conceptual elements of methodology should be "exposed to sunlight" (Kaplan 1964, 268). Dewey describes this phase of methodology as the "twilight zone of inquiry" (Dewey 1916, 174). The logic-in-use of Dewey and Kaplan emphasizes the "behind the scenes" elements of inquiry such as procedures for forming concepts and hypotheses (Kaplan 1964, 23). The "behind the scenes" elements of inquiry can and should be "exposed to the sunlight."

Theory and Practice

One of the unique facets of Kaplan and Dewey's approach is the extraordinarily tight connection between theory and practice. Theory is used to organize exploration of the problem at hand. Dewey and Kaplan's key insight is that without the problem there would be no need for theory. Conceptual frameworks are connected to outcomes or problem resolution because they aid in making judgment. Theory includes the "logical instruments" of reaching judgment (Dewey 1938, 283). Dewey's common sense approach to theory and empirical inquiry has appeal to concrete, practice oriented, student-practitioners. It also gives them a new appreciation of the role and function of theory in management and policy.

Because micro-conceptual frameworks are applied to the problem at hand they guide data collection and interpretation. Thus these frameworks guide the most practical, mechanical, elements of empirical inquiry. For example questionnaire design, interview questions and content analysis coding sheets should be guided by theory. Choice of statistical tests as well as variable construction should be guided by theory. Our approach attempts to expose these connections to the "sunlight." In the process, theory is connected to data collection and interpretation. Kaplan (1964, 268) points out that

> every theory serves, in part, as a research directive. Theory is useful
> because it guides the collection of data and their subsequent analysis, by
> showing us beforehand where the data are to be fitted, and what we are to

make of them when we get them.... Without a theory, however provisional or loosely formulated, there is only a miscellany of observations, having no significance.

For Kaplan and Dewey theory emerges as a tool to address an immediate practical problem and is most evident in the collecting, organizing and interpreting of empirical evidence (both qualitative and quantitative). Theory enables analysis and synthesis because its structure provides a big picture and a little picture simultaneously.

Concepts and theories have a role in inquiry as "prescriptions for organizing the materials of experience so as to be able to go about our business" (Kaplan 1964, 46). A theory conforms to the facts and it is a way of looking at the facts. "Theory must fit God's world, but in an important sense it creates a world of its own" (Kaplan 1964, 309). The tool metaphor, once more, applies. Clearly tools are of this world and they exist to solve problems. Nevertheless, in the process of application they also transform the world. It should be noted that conceptual frameworks are out in the open and still conjectural or hypothetical. They are not truth, rather a systematic (yet subject to reason) way to organize inquiry (Kaplan 1964, 296).

For John Dewey, inquiry involves transformations that are achieved by

means of operations of two kinds ... One kind of operations deals with ideational or conceptual subject-matter. ... The other... is made up of activities involving the techniques and organs of observations (Dewey 1938,117).

This paper deals with ways to enable the "transformations" of inquiry, linking the "conceptual subject-matter" to the "techniques and organs of observation." [8]

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[8] The connection between Dewey, Kaplan and the philosophical underpinnings of these courses is more fully developed in Shields (1998) "Philosophy of Science" and Shields (2003) "Pragmatic teaching philosophy."

The student's choice of the conceptual framework (which tool?) is directed by the nature of the problem. But how do micro conceptual frameworks help organize the observed world and connect it to the research problem?

Dewey (1938, 402) compares conceptual frameworks to maps. Maps are problem-solving tools. They help navigation through experience or the experiential world. They also represent and abstract from reality. When accurate, maps enable navigation within reality.

Like maps, micro conceptual frameworks in empirical inquiry must have a directive function. "When the directive function of the map is left out of consideration it must be said that no map is 'true'" (Dewey 1938, 402). True maps produce "consequences that are intended to be served by the map" (Dewey 1938,403).

Dewey points out that, "problems are constantly changing and therefore require conceptual tools which must be constantly refashioned to meet the new demands" (Flowers and Murphy 1977, 812). Hence, there are two kinds of tools (micro frameworks), ones that can be pulled out of the tool box (ready made) and those that must be created. Indeed, Dewey maintains that,

> there is the same sort of advantage in having conceptual frameworks manufactured and on hand in advance of actual occasions for their use, as there is in having tools ready instead of improvising them when need arises. (Dewey 1938,136)

When students engage in empirical research, they must first identify a problem and then search for a theory or tool to help connect the problem to observed data. The micro-framework can already exist (pick a tool from the tool box) or it may be improvised (make the tool). The invention of theory is a type of theorizing.

This approach emphasizes the connective function of conceptual frameworks. These frameworks help students connect forward into the problem and give direction on how to collect and analyze data. They also have a connective function backward to

the background literature and meta-frameworks. Students are expected to justify their framework by connecting it to the scholarly literature (or an existing PA framework).

A literature review enables the student to get to know their topic, connect the larger literature to their work experience and refine the research question or problem. The literature review may also reveal where previous inquiry has stopped. Conceptual frameworks are built upon the premise and practice of a careful, thoughtful and reflective review of the literature. Students are thus expected to draw upon the wisdom and insights of the literature and their experience to develop a plan or map to guide their inquiry. A good map helps one reach an unknown destination more quickly and with less anxiety.

Classifying and Nesting Micro Frameworks

Unlike most approaches to methodology that place conceptual frameworks in the " twilight region" of inquiry (Kaplan 1964, 268), we give micro conceptual frameworks names and classify them into five concrete categories. In the early stages of problem formation and conceptualization the five types of micro-conceptual frameworks are linked to a "research purpose" in this way:

Framework	Research purpose
1) Working hypotheses	Exploration
2) Categories	Description
3) Practical ideal type	Gauging
4) Models of Operation Research	Decision Making
5) Formal hypotheses	Explanation/Prediction

Each micro-framework is linked to a particular type of research purpose and question. We began offering POSI 5335 (first Class) in the early 1990s. Then and now we

use Earl Babbie's *The Practice of Social Research* as a text. In chapter four "Research Design" Babbie (2004, 87- 90) introduces three research purposes – exploration, description, and explanation. After struggling with how to communicate the nature of conceptual frameworks in class (and having read Dewey and Kaplan as part of a scholarly agenda) we realized there was a disconnection in most research methods texts. The formal hypothesis was the implicit framework underlying much of the discussion in social science methodology texts, whereas, most of our student research was either descriptive or exploratory. The relational logic of formal hypotheses often did not fit and was a source of confusion for everyone involved in the process. No wonder students were confused! Further, applied public administration research did not seem limited to the three research purposes that Babbie (2004) identified for social science.

Thus began our search for additional conceptual frameworks and research purposes. Categories were the obvious framework associated with description. Through ongoing discussions we determined that if we were able to pair purpose and framework, the entire research process would have greater coherence. The pairing of purpose and framework depicted above is the result of our discussion.

 Of course, before a framework can even be considered, students face challenges of finding a topic, narrowing a topic so that the research question can fit one of the research purposes. The method (*Step by Step* notebook) we use to address this aspect of the course is more fully developed in several scholarly sources and is not the subject of this paper[9].

Once the students can identify their research purpose the conceptual challenge is simplified because they can name the framework they are searching for. The naming

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[9] See Shields (1998) Shields (1999) Shields (2004) and Shields (2003). The logic of the *Step by Step* notebook (Shields 2004) is also grounded Dewey and Peirce's theory of inquiry as well as insights from contemporary philosophers such as Larry Hickman.

makes the search more concrete. They are better able to decipher which literature and life experiences are important. The task of organizing inquiry is easier and more productive.

In addition, in order to give the frameworks a context within the empirical research process, the frameworks are nested within a cluster of research elements beginning with the research purpose and including the research question, methods/techniques and statistics (See Table 1).

Table 1
Classifying Micro-Conceptual Frameworks[10]

Research purpose (1)	Research Question (2)	Micro-Conceptual Framework (3)	Research Technique/ Method (4)	Statistical Techniques (5)
Exploration	Anything Goes What, When, Where, Why, Who, How, or any combination of the above	**Working Hypotheses**	Usually qualitative techniques: field research, structured interviews, focus groups, document/ archival record analysis	Qualitative evidence may not be statistical But anything goes Any type of statistical analysis possible
Description	What	**Descriptive categories**	Survey and content analysis	Simple descriptive statistics: Mean median, mode frequency distribution, percentages, t-statistics
Gauging	How close is process/policy to an ideal or standard?	**Practical Ideal Type**	Case study, survey, content analysis, document analysis, structured interviews	Simple descriptive statistics: Mean median, mode frequency distribution,

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[10] This table appears in an earlier *J-PAE* article, Shields (2003,8).

	How can x be improved?			percentages, t-statistics
Decision making	What is the best decision? Which approach?	**Models of Operations Research**	Cost Benefit analysis, Cost Effectiveness Analysis, linear programming, decision tree, etc.	Quantitative techniques of Operations Research
Explanation	Why	**Formal Hypothesis** If x then y	Usually Quantitative, Experimental and quasi experimental design, Survey, existing data analysis	t-statistics, correlation, Chi-Square, analysis of variance, simple and multiple regression

Like most courses, POSI 5335 has evolved since it was first introduced in 1991. Table 1 for example was not formalized until 1997. And it was not until 2000 that we started to require students to construct the conceptual framework tables at the prospectus stage. Once the research purpose is formalized and the type of framework recognized, students must search for the unique elements of their framework. These unique elements should be justified by the scholarly literature on this subject. Requiring students to construct these tables has led to both better Applied Research Projects and have made the projects easier to supervise. Ideally the required conceptual framework table connects column 1 (research purpose) and column 3 (micro-conceptual framework) of Table 1. The required operationalization table connects column 3 (micro-conceptual framework) and column 4 (research technique/methodology) and sometimes column 5 (statistics). Hence, theory or the conceptual framework is the centerpiece of all applied research projects.

Once we are satisfied with the operationalization table, it is clear how the ARP will be organized and consistent supervision does not require a good memory. Hence, the remainder of this paper focuses on explaining the frameworks and illustrating the conceptual framework tables that are the structure of every Texas State Applied Research Project.

It should be noted that these frameworks are developed to deal with the complexity of real world problems. Research questions are not answered with a simple yes or no. For example, Rachael Jeffers wanted to better understand the nature of development sprawl and study the attitudes of city managers toward sprawl. After extensive reading and reflection on her experiences with city managers[11], she focused the investigation by examining how sprawl influenced city finance and service provision, annexation policy and regional government policies. Because her research was preliminary, she developed three working hypotheses (and a series of sub-hypotheses) that were categorized by the criteria above.

Valerie LaCour Francois (2004) was asked by her supervisor to analyze the City of Austin's employee grievance procedures. She was expected to make recommendations to improve the current system. Valerie used a practical ideal type framework to identify key components of grievance procedures found in the literature. That way she could compare the existing system with a standard developed from the literature using case study techniques. Keiji Shirota (2003), a young accountant, was interested in investigating how public finance officials in local government assessed the Government Accounting Standards Board (GASB) new reporting requirements as summarized in *Statement 34.* He used categories (adequacy and accountability, usefulness, accuracy of representation and cost of implementation) as the basis of his empirical investigation (source of his survey questions).[12]

Introducing conceptual frameworks

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[11] Rachael works for the Texas Municipal League. She interacts daily with Texas City Managers.
[12] Unfortunately, the nature of an empirical capstone project limits size and scope of the research questions that our students investigate. Many of the most interesting questions require time, skills and effort well beyond the expectations of the class. We always keep in mind the goal of graduation and finding a manageable topic as the student focus on their research question/purpose.

We introduce the topic of conceptual frameworks and Table 1 during the second week of class (POSI 5335). Beginning a large research project is a challenge. Students often feel at a loss about their research topic much less finding this mysterious thing called a conceptual framework. Most are confused and overwhelmed.

To connect to their feelings of confusion and to show them the usefulness of frameworks, we ask them to imagine themselves as a native of China that knew little of western ways of cooking. Imagine being placed in a Western kitchen that had every item in disarray on the floor. Their problem would be to organize the kitchen. They would need to user their own experience and knowledge of eating as well as learn about Western cooking (do a literature review). They would also somehow need to see that knives and forks were connected (as flatware) and that pans and their lids might go near each other.

We are able to find what we need in a kitchen when it is organized (or like things are near each other – flatware are together as are pots and pans). Like the Chinese person attempting to organize a Western kitchen, the students would at times be bewildered and confused (perhaps more so). Their challenge might include finding a kitchen (topic) and deciding what to do (organize it). These feelings are natural. Also, there is not one perfect way to organize a kitchen. Their conceptual framework helps them to organize inquiry into the problem at hand and is not expected to be perfect (drawing on Dewey's theory as tool metaphor).

Without the knowledge that they would be required to develop and present a conceptual framework and operationalization table, students usually avoid the challenging work of conceptualizing. Both tables present unique challenges. The conceptual framework table requires theorizing. In the operationalization table students are expected to show how their conceptual framework moves from the abstract to measurement and modes of evidence collection. In other words, they move to the real world of public administration practice.

Working Hypotheses[13]

Exploratory or preliminary research is linked with the micro-conceptual framework "working hypotheses." Working hypotheses signal that conceptualization is in its preliminary stages. The working hypothesis is a pivotal concept in Dewey's (1938) theory of inquiry. Working Hypotheses are a "provisional, working means of advancing investigation," they lead to discovery of other critical facts (Dewey 1938, 142). This is the type of theory Kaplan (1964, 268) would describe as "provisional or loosely formatted." Although the working hypothesis is preliminary, we still emphasize that it should like all hypotheses be in the form of a statement of expectations. And, it must be possible to collect evidence that either supports or fails to support the expectation. Further, working hypotheses (like formal hypotheses) are never proven. They are supported with empirical evidence.

Given the preliminary nature of exploratory research, working hypotheses are a micro-conceptual framework that is usually "invented." The working hypotheses are invented using information from the literature and the student's experience. In practice, most students use broad categories to classify working hypotheses and then a series of sub-hypotheses within the broad category are used to connect to the data or evidence (the link to experience). Working hypotheses direct inquiry because they help to establish the connection between the research question and the types of evidence used to test the hypothesis. This link is formalized in the operationalization table.

Examples Working Hypotheses Tables

Michelle Romero's ARP is a good example of how working hypotheses are used to organize and propel inquiry. She works for a Texas State Representative Jim Solis (D-Harlingen) and had been involved with the legislative side of performance

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[13] For an extensive discussion of the role of working hypotheses in public administration inquiry see Shields 2003 (a) and 2004.

measurement. This led her to the topic of performance measurement and a desire to understand how the Texas State agency leaders viewed the performance measurement system. After a careful literature review she developed the following purpose statement. "The purpose of this research is to investigate the attitudes and perceptions of state agency leaders toward utilization of the current performance measurement system in Texas state government" (Romero 2004, 5). She developed six working hypotheses to capture the many dimensions of a performance measurement system. The working hypotheses dealt with the broad subject areas - communication, quality of information received, resources available to implement, disposition to implement, bureaucratic structure and utilization of the measures. Table 2 illustrates the first two working hypotheses found in Michelle's actual conceptual framework table. (See Romero 2004, 45-47 for the entire conceptual framework table).

The conceptual framework table is usually found at the end of the literature review chapter. It is also used to structure much of the narrative of the chapter. It serves as type of outline with the literature already identified. Each working hypothesis (and sub-hypotheses) is explained, developed and defended under separate subheadings that correspond to the key concept in the working hypothesis.

Table 2
Part of Michelle Romero's Conceptual Framework Table

Working Hypotheses	*Scholarly Support*
WH1: Effective communication is evident in the performance measurement system	Behn(2003), Caiden (2000), Grifel (1994), Grizzle & Pettijohn (2002). Kravchuck & Schack (1998), Long & Franklin (2004), Moore & Heneghan (1996), Wilson (2001)
WH1a: Strategic plans are clearly communicated.	Behn(2003), Julnes & Holzer (2001), Kravchuck & Schack (1998), Moore & Heneghan (1996)
WH1b: Performance information guidance is clearly communicated	Behn(2003), Grizzle & Pettijohn (2002), Heinrich (2002), Julnes & Holzer (2001), Kravchuck & Schack (1998), Moore & Heneghan (1996).
WH2: The performance measurement system operates with good information	Behn(2003), Grizzle & Pettijohn (2002), Julnes & Holzer (2001), Kravchuck & Schack (1998),

	Moore & Heneghan (1996).
WH2a: Performance information is reliable and accurate	Behn (2003), Bouckaert (1991), Frederickson (2002), Grifel (1994), Grizzle & Pettijohn (2002), Heinrich (2002), Julnes & Holzer (2001), Melkers & Willoughby (2001), Moore & Heneghan (1996), Radin (1998).
WH2b: Performance information is monitored for compliance	Grifel (1993), Grizzle & Pettijohn (2002), Heinrich (2002), Julnes & Holzer (2001), Kravchuck & Schack (1996), Melkers & Willoughby 2001).

Since Michelle's purpose was to "investigate the attitudes and perceptions of state agency leaders" she needed to either develop interview questions or survey questions. Michelle was interested in generalizing to a large group of agency leaders so she decided on survey research. She used the working hypotheses to develop her questionnaire. Note she could have used the working hypotheses to develop either interview questions or as the basis of a case study where she would probably need to carefully look at documents and interview people at all levels of an organization.

The operationalization table (Table 3) shows how her questionnaire items correspond to the working hypotheses. My rule of thumb is that each sub-hypotheses should have at least one questionnaire item. She used a Likert Scale in the actual questionnaire (See Romero 2004, 56-57 for the complete operationalization table).

Table 3

Part of Michelle Romero's Operationalization Table

Working Hypotheses	*Survey question*
WH1: Effective communication is evident in the performance measurement system	The Texas performance measurement system is developed with clear communication from stakeholders.
WH1a: Strategic plans are clearly communicated.	Performance measures are developed with a direct linkage to agency strategic plans.
WH1b: Performance information guidance is clearly communicated	Staff using performance measures receive clear guidance information.
WH2: The performance measurement system operates with good information	The Texas performance measurement system operates with good information.
WH2a: Performance information is reliable and accurate	My agency's performance measures are based on reliable information.

WH2b: Performance information is monitored for compliance	My agency's performance measures are monitored to ensure data validity.

Michelle structured her results chapter around the conceptual framework. The chapter subheadings consist of the key concept imbedded in the working hypothesis (e.g., Communication, Information). Using the operationalization table as a guide, the results are summarized in tables and then summarized in the narrative section within the corresponding subheading. She analyzed the three questionnaire items under "communication" found in the operationalization table. Table 4 is one of six tables that correspond to the conceptual framework found in Michelle's Results Chapter (Romero 2004, 61).

Table 4

One of Michelle Romero's Results Tables (Effective Communication)

Working Hypothesis	Survey Question	N	%Agree & Strongly Agree	Mode
WH1: Effective communication is evident in the performance measurement system	Texas performance measurement system is developed with clear communication	67	37%	Neither Agree or Disagree
WH1a: Strategic plans are clearly communicated.	Performance measures are developed with linkages to strategic plans.	67	63%	Agree
WH1b: Performance information guidance is clearly communicated	Staff receives clear guidance information	68	75%	Agree

The conceptual framework is used again in the Conclusion chapter to summarize the findings. Table 5 is an incomplete example of Michelle's concluding table (Romero 2004, 78-79). Table 5 was also the basis of much of the narrative of the concluding chapter.

Table 5
Detailed Summarized Findings by Working Hypothesis & Sub-Hypothesis

Working Hypothesis			Sub-Working Hypothesis	Working Hypothesis
WH1		Effective communication is evident in the performance measurement system.		Support
	WH1a	Strategic plans are clearly communicated.	Supported	
	WH1b	Performance information is clearly communicated	Strong Support	
WH2		The performance measurement system operates with good information.		Support
	WH2a	Performance information is reliable and accurate.	Strong Support	
	WH2b	Performance information is monitored for compliance.	Strong Support	
WH3		Proper resources are invested in the performance measurement system.		Support
	WH3a	Expert staff is committed to success of the performance measurement system.	Support	
	WH3b	Resources are applied to data collection technology for performance measurement system.	Strong Support	
	WH3c	Resources scarcity negatively affects performance measurement system.	Support	

Michelle's use of working hypotheses is fairly typical in that the hypotheses do not specify a relationship between variables. Rachael Jeffers (2003, 46) used relational working hypotheses to study city managers attitudes toward urban

sprawl. Rachael had three research purposes. Each purpose had a separate working

hypothesis. Table 6 shows her conceptual framework table as it is linked to the

literature for her first research purpose. Again, her literature review was organized

around the working hypotheses and she used the sources listed in her table as sources

in the narrative portion of her literature review.

Table 6
Working Hypotheses for city finance and service provision

Research Purpose 1: Explore Texas City Managers' assessments of the effects of development sprawl on city finance and service provision.

Working Hypothesis	Source
WH1: Development sprawl negatively affects city finance and service provision.	Carr & Feiock, 2001; Katz, 2000; Mikesell, 1999; U.S. Census Bureau, 2001b; U.S. Census Bureau, 2002
WH1a: Development sprawl negatively affects a city's tax base.	Carr & Feiock, 2001; Daniels, 2001; Leo & Beavis, 1998; Mikesell, 1993; Mikesell, 1999; Pagano, 2002; Rybczynski & Linneman, 1999; U.S. Census Bureau 2002
WH1b: Development sprawl negatively affects city transportation infrastructure.	Gurwitt, 2000; Mikesell, 1999; Speir & Stephenson, 2002; Stoel, 1999
WH1c: Development sprawl negatively affects city police and fire protection services.	Gurwitt, 2000; Mikesell, 1999; Speir & Stephenson, 2002; Stoel, 1999

Table 7 illustrates Rachael' s operationalization table. Because her hypotheses are

relational she identifies the independent and dependent variables, the questionnaire

items, and the direction of the hypothesis for each sub-hypothesis (Jeffers 2003, 64).

Table 7
Operationalization of the Conceptual Framework for Research Purpose 1

Research Purpose 1: Explore Texas city managers' assessments of the effects of development sprawl on city finance and service provision.			
Working Hypothesis 1: Development sprawl negatively affects city finance and service provision.			
Variable	**Hypothesis**	**Hypothesis**	**Questionnaire Item**

	number	Direction	
Dependent Vbl. 1: Tax base adequacy	WH1a		7. The city's tax base is adequate.*
Dependent Vbl. 2: Transportation infrastructure adequacy	WH1b		5. The city's transportation infrastructure is adequate.*
Dependent Vbl. 3: Police and fire protection services adequacy	WH1c		6. The city's police and fire protection services are adequate.*
Independent Variable 1: Current level of development sprawl	WH1a	negative	2. Currently, the amount of development in the unincorporated areas surrounding the city limits is **
	WH1b	negative	
	WH1c	negative	

Response Scales and Codes

*Strongly agree (5); Agree (4); Neutral (3); Disagree (2); Strongly Disagree

** Very High (5); High (4); Moderate (3); Low (2); Very Low (1)

NA record thrown out

Like Michelle, Rachael organized her results chapter around the three working hypotheses. The correlations coefficients she used to test WH1 are summarized in Table 8 (Jeffers 2003, 73). Note that she was also interested in looking at results for both General Law and Home Rule cities.

Table 8
Statistics for WH1: City Finance and Service Provision

Variable	Overall Mean & Mode	Overall Standard Devia-tion	Current Level of Development Sprawl		
			Overall Correlation Coefficient N=303[a]	General Law Correlation Coefficient N=141	Home Rule Correla-tion Coefficient N=162[b]
Current Level of Development Sprawl	3.0 Moderate	1.1	1	1	1
Tax Base Adequacy	2.9 Disagree	1.2	.13*	.07	.17*
Transportation Infrastructure Adequacy	3.1 Agree	1.2	-.12*	-.2*	.06
Fire Protection Services Adequacy	3.8 Agree	1.0	.03	.06	-.08

* significant at .05 level
a The actual number varied by variable between 303 and 305.
b The actual number varied by variable between 162 and 164.

In the conclusion chapter, she summarized her findings with a table that modeled after her conceptual framework (See Table 9; Jeffers 2003, 82).

Table 9

Part of the Summary Table for Rachael Jeffers Conclusion Chapter

Working Hypothesis			Sub-Working Hypothesis Support	Working Hypothesis Support
WH1		Development sprawl negatively affects city finance and service provision.		Weak Partial Support
	WH 1a	Development sprawl negatively affects a city's tax base.	Reject	
	WH 1b	Development sprawl negatively affects city transportation infrastructure.	Mixed	

	WH 1c	Development sprawl negatively affects city police and fire protection services.	Reject	

Although working hypotheses are associated with research at its early stages, their flexibility allow for the most sophisticated, complex research questions and design. Three of the five Pi Alpha Alpha papers used working hypotheses as their framework.[14]

For example Pi Alpha Alpha winner Shivaun Perez (2000, 1-2) explored the following question: "*If the dynamics of modernization still continue to threaten social kinship, is it possible to reintroduce the theory of pragmatism as a guiding principle in education reform?*" She was familiar with a charter school (American Youth Works AYW) that extensively used service learning (a principle of pragmatic education). She developed two refined research purposes to further explore her topic. "*First, it assesses the AYW's practice of service learning using pragmatic principles of education; Secondly, it describes AYW's student perceptions of support and motivation using the Search Institute Survey of Developmental Assets.*"

Her Working Hypotheses correspond to the two research purposes.
First Working Hypothesis: The service-learning model offered by the American Youth works reflects various principles of pragmatic education
  WH1a: AYW practices collaborative learning activities.
  WH1b: Teachers participate in collaborative teaching activities.
  WH 1c: The school promotes community education.
  WH1d: The AYW offers practical education.

Second Working Hypothesis: Students at America youth Works express external and internal assets that indicate school satisfaction and a desire to succeed.

  WH2a: Students express external assets that support student success.
  WH2b: Students at the AYW express internal assets that indicate feelings of bonding to the school satisfaction and a desire to succeed.
  WH2c: Alumni of the AYW believe that school made a difference in their lives."
(Perez, 2000,10)

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[14] See Shivaun Perez(2001), Kevin Baum (1997), Timothy Wilson (2002).

Guided by these working hypotheses Shivaun developed an operationalization table that showed how she would use surveys, participant observation, document analysis and interviews to gather evidence to address the research question.

This is clearly an example of a sophisticated approach to research. She used the principles of John Dewey, William James as well as a host of current educational reform scholars to develop her framework.

The working hypothesis is a conceptual structure with wide applicability. It is an organizing device that easily crosses the boundary into the everyday world and particularly to the day-to-day activities of management. Working hypotheses are diagnostic tools similar to the small questions that direct an investigation (making it controlled inquiry). Detectives use working hypotheses as an investigative tool. When a medical doctor is confronted with a sick patient, working hypotheses and evidence (fever, blood count, etc.) are used to make a diagnosis.

Perhaps managers use crude forms of working hypotheses all the time in the course of their jobs. Working hypotheses would be helpful for any problem that fell outside routine operating procedures. Managers would benefit from the explicit use of working hypotheses because the theorizing process necessary in controlled inquiry would be more conscious—less in Kaplan's "twilight region."

Categories

Categories or classification is the easiest and most basic micro-conceptual framework to see/use. Categories are linked to the descriptive purpose and paired with "What" questions. Classification is a powerful conceptual tool that is often not seen by practitioners. Raising the students consciousness about classification as an organizing tool is a major benefit of this approach.

Kaplan (1964,50) discusses the process of conceptualizing associated with categories.

> In this process the things studied are classified and analyzed: several things are grouped together and particular things assigned to the several groups to which they belong...Things are grouped together because they resemble one another.

Dewey likens categorization to sorting like things in bins. The categories are labels for the bins. Dewey also locates generality in the activity of producing inquiry, in operations performed with a view toward particular problems or questions. "Sorting is done on the basis of need to draw certain inferences to solve certain problems to construct or produce instruments that will be effective in the resolution of experienced difficulties" (Hickman 1990, 129). The Chinese person that was asked to organize a Western kitchen is an example of a category problem. How well the organization supports the cook and the meals produced tests the efficacy of the categorization. The categorization scheme exist to support the production of healthy meals, it can be modified as experience suggests change. There is no sense that the categorization scheme is either fixed or perfect. It is a tool to facilitate the functioning of the kitchen. Hence, classification systems are not fixed. Rather the conceptual challenge is to look for a "family resemblance" to classify likes. (Kaplan 1964 , 68) Fixed taxonomies are problematic because they can lead to dichotomies (value and fact) that are viewed as truth.

Through the literature review students are expected to start finding "What" aspects of a phenomena they want to describe. The complex and multifaceted nature of public management and policy dictates a descriptive framework that is often multifaceted. The literature review should also help them find "family resemblances" and "labels" for the bins. When students find existing ways to label the bins they are using previously constructed "tools." When the literature hints at ways to describe an phenomena they must "invent" the bin labels.

For some reason, students are often reluctant to invent the labels. The explicit challenge of inventing a descriptive framework requires a degree of intellectual independence that makes them uncomfortable. This is ironic because managers are stronger if they can recognize that some kind of abstract framework helps to organize a problem and that they may be responsible for the framework development. People who own problems may need to build tools.

Categorization is flexible. If it becomes clear that a given "categorical scheme" is incomplete or incompatible with the research question the categories should be revised. The sorting bins should be given new labels and the materials inside resorted. Categories are a way to organize the "stuff of experience." The labels do not represent truth. Erin McKinnery (2004) used index cards to identify aspects of the problem she was considering. She then sorted the index cards into groups that became her larger categories. The process of sorting took her several days.

Description is often chosen as a research purpose when students discover that basic information is missing from the literature. Rebecca Anderson (2003) was interested in domestic partner policy. She discovered that formal domestic partner policy could include a variety of benefits. Unfortunately, a systematic inventory of the kinds of benefits offered was missing from the literature. Rebecca's purpose statement follows:

> The purpose of this research is to describe domestic partner benefits in
> state, county and city government. While the literature indicates many
> possible components of these policies, it does not provide a particular
> framework to describe the policies or any detail which elements are
> part of existing policies. The intent of this research is to develop a
> framework from the literature and then measure actual policies in use
> by government entities for the presence of those elements using
> descriptive categories. (Anderson 2003, 3)

Rebecca used content analysis to describe domestic partner benefits.

Over the 16 years we have used the two-course sequence for our capstone

experience, the use of categories as a framework has changed dramatically. As part of an ongoing MPA Program assessment, students such as Ana Almugel, Mary Gute, and Saidat Ilo have performed content analysis of the Texas State Applied Research Projects. In 1997 Almugel found that almost 60% of the previous ARPs used descriptive categories. By 2005 Saidat Ilo discovered that the percent had dropped to ??? Descriptive categories, by only addressing the "What" question, were ill suited to help public administrators make judgments, do analysis, or make recommendations. We began to realize that the principles of categorization were imbedded in other frameworks like working hypotheses and the practical ideal type.

Practical Ideal Type

The practical ideal type corresponds to the research purposes gauging. This is a research purpose we added to the Earl Babbie's (2004) three – exploration, description and explanation. We realized that most social science research is not designed to incorporate normative judgment or to be applied to immediate practical problems. Public administrators often use research findings to make recommendations to improve programs. In other words, they are asked to *gauge* the effectiveness of program processes. One way to gauge the efficacy of program processes is to develop criteria for this judgment and the collect empirical evidence to contrast the reality of the program against the criteria.

We have named these criteria the practical ideal type. In other words, the criteria are the components of a nearly ideal process. We use the term "practical" to indicate that the criteria or model components are not perfect but subject to revision. The practical ideal type is just the best components that the student could find after engaging in a careful review of the literature tempered by their experience. The notion is also consistent with the logic of Dewey and Kaplan that underlie the larger approach to theory.

Unlike the "*What*?" research question associated with description, gauging research asks "*What should*?" (how close is process x to the ideal or standard?). The research purpose is to *gauge* "What should" be done to improve an administrative process.

The practical ideal type conceptual framework is like a combination of categories and working hypotheses. Descriptive categories do not contain an explicit normative direction. The categories of the ideal type do and thus can be treated as statements of expectation (or working hypotheses) that direct evidence collection – and can be supported or not supported by the evidence.

The beauty of the practical ideal type is that when evidence is collected, students are able to make recommendations and assess strengths and weaknesses. The practical ideal type is a micro-conceptual framework equipped to address issues raised by formative program evaluation.

The search for "Best Practices" is a kin to the search for a practical ideal type. (The best practice is what *should* be in place.) "Practical" is the key term for this micro-conceptual framework. In other words, the ideal is itself under construction. The framework represents a starting point and is itself subject to revision.[15] Dewey (1938, 303) stresses that "ideals...are not intended to be themselves realized but are meant to direct our course to realization of potentialities" in experience. Kaplan (1964,83) describes an ideal type as a construct. It "specifies something with which the real situation of action is compared and surveyed for the explication of certain of its significant components." To sanctify the ideal and to disparage the actual because it fails to comply with the ideal misses the point.

> A vision is not a scene but it can enable us to construct scenes which would not exist without it.... To ignore or depreciate ideal because it cannot be literally translated into existence is to acquiesce not only to

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[15]In Conclusion chapter students often comment on the strengths and weaknesses of the framework. A new more refined practical ideal type may emerge.

things 'as they are' — as is something said- but also to things 'as they are not' because all things that are have potential. (Dewey 1938, 304)

Practical ideal types are generally organized by category. Clearly, the practical ideal type must have strong ties to the broader literature. Applied Research Projects that included well crafted Practical Ideal Types are easy to supervise. The Practical Ideal Type directs the search for evidence as well as the organization of the results. It also provides a straight forward way to *interpret* the meaning of the findings.

Practical ideal types provide benchmarks and/or best practices that enable the manager/researcher to understand (and improve) reality. For example, NASPAA uses standards to assess masters degree programs (ideal type – or in the case of NASPAA minimum acceptable standards). Existing standards (laws, regulations) can be viewed as ready-made conceptual frameworks. A key point is that practicing public administrators are confronted with 'ready made' conceptual frameworks similar to the practical ideal type in many aspects of their job.

Example of Practical Ideal Type

Sharon Ley (2002) worked for the Texas State Bar Association. She became interested in succession planning and particularly about the "Fellows Program" a pilot succession-planning program used at the Texas State Bar. She was interested in assessing the program and potentially offering suggestions that could improve it. Sharon developed a three-pronged purpose statement. The first purpose dealt with building the ideal type model itself. Sharon Ley's purpose statement follows:

> The purpose of this applied research project is threefold. First, it will describe the ideal characteristics of an effective succession planning program based on the literature. Second, it will assess the State Bar of Texas Fellows Program Pilot Project using the practical ideal type characteristics. Finally, the project will develop strategies for improving the effectiveness of the State Bar of Texas Fellows Program (Ley 2002, 7).

Her formal conceptual framework is found on Table 9 (Ley 2002, 27). Here she identifies both the broad categories of an idea succession plan such as "Top management support" and "Needs driven assessment." Within these categories are elements that further define the meaning of the category. For example, top management support translates to: 1) board and CEO support; 2) open discussion of potential employees; and 3) willingness to hire across division lines. Like the other conceptual framework tables, Table 9 also includes the sources Sharon Ley used to construct and defend each category of the practical ideal type model. Instead of a literature review chapter, Sharon's second chapter "Succession Planning Model," was devoted to constructing the model. The categories in Table 9 made up key subheadings in the chapter. The references listed were used to explain and justify the components of the model in the narrative.

Table 9

Ley's Conceptual Framework of Succession Planning Programs

Ideal Type Categories	Sources
Top management participation & support - Board, CEO and Senior Management support and participation - Open discussion of potential employees - Willingness to hire across division lines	Rothwell 2001, Schall 1997, Spoor 1993, Walker 1998, Getty 1993, Shah et al 2001, Gratton & Syrett 1990, Nowack 1994
Needs driven assessment - external benchmarking - assessment of core competencies of positions	Rothwell 2001, Holton et al, 2000, Nowack 1994
Provide formal professional development opportunities - Orient potential leaders with organizational environment - Formal Mentoring - Access to leadership development seminars	Rothwell 2001, Bard & Moore 2000, DiMattia 2000, Delahoussaye (a), 2001, Foster 2000, Barker, 1997
Focused on individual attention - listen to employee's goals/desires - individuals make training choices - emphasize growth in qualities to take employees beyond "next rung" in ladder	Rothwell 2001, Spoor 1993, Shah et al 2001, Gratton & Syrett 1990, Nowack 1994

Dedicated Responsibility - Coordinator that keeps plan current - Create computerized models - Dedicated funds/budget - Systematic approach - Keeps track of future needs	Rothwell 2001, Getty 1993, Shah et al 2001, Gratton & Syrett 1990, Nowack 1994, Peak 1996
Extends to all levels of organization - identify talent at all levels - open communication and knowledge of plan	Schall 1997, Walker 1998, Getty 1993, Sogunro 1997
Part of strategic plan - strategic plan determines which positions will be in succession plan - have written purpose statement and measurable goals	Rothwell 2001, Spoor 1993, Gratton & Syrett 1990, Foster 2000

Sharon used a case study technique to achieve the second purpose "assess the State Bar Fellows Program using the Practical Ideal type." Table 10 illustrates a portion of her operationalization table (Ley 2002, 37-38). She identifies the method used (document analysis, focused interviews and participant observation). The evidence needed to support the hypothesis is listed as is the data sources (types of documents and who she would interview). The table also guides her methodology chapter discussion. For example she discusses the single case study as well as the techniques (e.g., document analysis) their strengths and weaknesses, sampling issues associated with each technique and the biases she expects.

Table 10
A Portion of Ley's Operationalization Table

Ideal Type Categories	Research Methods	Evidence	Sources

Top management participation & support - Board, CEO and Senior Management support and participation - Open discussion of potential employees - Willingness to hire across division lines	Document Analysis Focused Interviews Participant Observation	Board recognizes need for program. CEO displays verbal and written support of program. Program is discussed at senior management meetings. Existence of written policy of hiring/ promoting across divisions.	Board Meeting minutes Senior Management meeting notes, email messages from Executive Director to Division Heads HR promotion records Interviews with Senior Management

The results chapter is, again organized by the operationalization table. Sharon used the categories in the ideal type model as subheadings. Then, she discussed the findings for each type of research technique (e.g. document analysis, focused interviews). At the end of the section she summarized her findings in tables (See Table 11; Ley, 2002, 46).

Table 11
Top Management Participation and Support – Results

Ideal Type Categories	Evidence	Research Method	Evidence Supports
Top management participation & support - Board, CEO and Senior Management support and participation - Open discussion of potential employees - Willingness to hire across division lines	Board recognizes need for program. CEO displays verbal and written support of program. Program is discussed at senior management meetings. Existence of written policy of hiring/ promoting across divisions.	Document Analysis Participant Observation Focused Interviews	Somewhat Yes No No

At the close of the results chapter, Sharon had successfully addressed her second

purpose identified earlier "assess the State Bar of Texas Fellows Program using the practical ideal type." In the conclusion chapter she addressed her third purpose "develop strategies for improving the effectiveness of the State Bar of Texas Fellows Program." Sharon uses the model she developed earlier and her findings to develop these strategies. Recommendations tend to fall out of the model fairly easily. When the evidence suggests that practice is far from the ideal, recommendations that move the organization closer to the ideal are self-evident. For example Sharon found that top managers at the Texas State Bar were not really involved in the Fellows Program. She therefore recommended "Involve division heads in the decisions of the Fellows Program in order to receive their input and vision." (See Table 12) (Ley 2002,62).

Students are also encouraged to make recommendations that fall outside the ideal type framework as well as note probable sources of bias or error that should be taken into account when interpreting the findings.

Table 12
Fellows Program Pilot Project Case Study Recommendations Summary

Ideal Type Categories	Evidence Supports	Recommendation
Top management participation & support - Board, CEO and Senior Management support - Open discussion of potential employees - Willingness to hire across division lines	Somewhat No No	• Communicate goals of program to the division heads. • Involve division heads in the decisions of the Fellows Program in order to receive their input and vision.
Needs driven assessment - external benchmarking - assessment of core competencies of positions	Somewhat No	• Perform a needs assessment to identify the necessary skills for leadership positions

Provide formal professional development opportunities - Orient potential leaders with organizational environment - Formal Mentoring - Access to leadership development seminars	No No Somewhat	• Involve the division heads as mentors to obtain their expertise in related projects. • Offer more professional development seminars based on the needs of individuals. • All seminars should be mandatory.

The practical ideal type is a micro-conceptual framework that addresses "What Should" questions. When public managers ask questions about impacts or outcomes, the practical ideal type is inadequate. They must use the formal hypothesis as their micro-framework.

The Formal Hypothesis[16]

Explanatory research and the formal hypothesis are the mainstay of social and policy science. The philosophies of science most often associated with empirical, explanatory research are logical positivism and logical empiricism. Both use the hypothetico-deductive model. Explanatory research addresses the 'why' question. At its most basic, the formal hypothesis takes the form "if X then Y." Although causation and explanation are clearly different, for purposes of management and policy research, explanation approaches causation (it addresses the "why" question). One might restate the formal hypothesis as "X causes Y."

Students are often confused about hypotheses because their first academic experience with formal hypotheses was in a statistics class where the convoluted null hypothesis was stressed. As a result, the importance of the research hypothesis as a method of organizing inquiry was obscured.

The research hypothesis is the organizing engine that drives explanatory research. There are actually two formal hypotheses. One is associated with the abstract theory (this is the hypothesis found in the first conceptual framework table), the other is

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[16] In Table 1 we identify 5 types of conceptual frameworks. We do not discuss the conceptual framework "models of operations research" in this paper because our students seldom use it.

interpreted or operational (the operationalization table depicts the interpreted or operational hypothesis. Using more familiar language, the interpreted (or operational) hypothesis includes dependent and independent variables. Issues of sampling, probability and generalizability arise naturally. Inferential statistics are the quantitative method most often used to test the hypothesis. The null hypothesis is connected to theory and is placed in proper perspective.

From a PA perspective, explanatory research is important because all impact program evaluations use formal hypotheses. In its most general form the underlying hypothesis for all outcome oriented program evaluation is, " If program X then outcome Y" or "Program X causes outcome Y." If this causal (or explanatory) link were not anticipated then what is the justification for the program in the first place? Clearly, experimental and quasi-experimental designs are just different ways of testing the formal hypothesis: "if X then Y." The context and availability of data dictate, for example, whether a "pre-test, post-test control group" or a "post-test only comparison group" design is used. The dependent variable is always an outcome measure. The threats to internal validity commonly associated with impact evaluation research are more easily understood when the underlying hypothesis is seen.

Examples of Formal Hypotheses

David Pearson was interested in the effect of hospital closing on rural economies. At the time he was working for a rural health agency. After reading the literature he came up with the hypothesis in Table 13 (Pearson 2002, 42).

Table 13
Pearson's Hypothesis and Supporting Literature

Hypothesis	Supporting Literature

Hospital closures negatively effect the local economies of the counties where they were once located, over both the short-term and the long-term.	McGuire et al. 1993, Doeksen et al. 1997, Probst et al. 1999

While David's formal hypothesis dealt with the negative effect of hospital closures generally, his interpreted or operational hypothesis operationalized the notion of "local economy" as five dependent variables (labor force, unemployment rate, personal income, total earned income and population). He also operationalized short term as one year and long term as 10 years. Table 14 shows how these variables are measured, the data source and the direction of the hypothesis (Pearson 2002, 46).

Table 14
Table 4.1 - Operationalization of the Hypothesis

Variables (unit of measure)	Time		Data Source
	1 Year Later	10 Years Later	
Dependent			

Labor force (# employed)	(-)	(-)	Bureau of Economic Analysis
Unemployment rate (% unemployed)	(+)	(+)	Bureau of Labor Statistics
Total personal income ($ per county)	(-)	(-)	Bureau of Economic Analysis
Total earned income ($ per county)	(-)	(-)	Bureau of Economic Analysis
Population (# residents)	(-)	(-)	U.S. Census Bureau
Independent			
Hospital Closure (0,1 variable)	1 = hospital closure 0 = comparison		U.S. Dept. of Health and Human Services

David's methodology chapter also included information on the treatment and comparison group counties he used. Table 15 shows David's results. The five measures of the local economy found in the operationalization table frame the results table. (Pearson 2002, 57).

Table 15
Pearson's Independent t-test Results

Dependent Variable	Short-term change (t + 1) – (t - 1)	Long-term change (t + 10) – (t - 1)
Labor Force		
Treatment Group Mean (N=24)	22.54	957
Comparison Group Mean (N=24)	-46.63	1283
Mean difference	-69.17	326
t value	-.627	.924
p value	.534	.361
Unemployment Rate		
Treatment Group (N=24)	-2.25	-2.90
Comparison Group (N=24)	-1.83	-2.52
Mean difference	.42	.38
t value	.555	.332
p value	.581	.741
Total Personal Income (in thousands)		
Treatment Group (N=24)	16115	150316
Comparison Group (N=24)	19358	176962
Mean difference	3243	26646
t value	.555	.745
p value	.582	.460
Total Earned Income (in thousands)		
Treatment Group (N=24)	5949	54644
Comparison Group (N=24)	3914	57233
Mean difference	-2035	2588
t value	-.794	.185
p value	.431	.854
* Population is only measured reliably at the beginning of each decade	Short-term change (**1990**) – (**1980**)	Long-term change (**2000**) – (**1980**)
Population *		
Treatment Group (N=24)	718	3005
Comparison Group (N=24)	1620	4462
Mean difference	902	1456
t value	1.010	.748
p value	.318	.459

Conclusion

Students find the capstone process challenging and rewarding. The first

few months of the process are often frustrating. They find the problem of finding a research project topic challenging enough without having to delve into the mysterious world of conceptual frameworks. Most find the first course (POSI 5335) – the course that emphasized theory - the most challenging. The task of doing the empirical research in the second course (POSI 5397) is usually quite straightforward. Their conceptual framework and the operationalized theory imbedded in the operationalization table lay out exactly what they need to do. Most speak of light bulbs going off in the second course ("I finally understand 5335!"). When they see how easy it is to write up their results, and they see that their final product has a measure of sophistication beyond their expectations they understand the value of the conceptual framework table.

As professors we enjoy hearing students describe how they see things differently and ask different questions during meetings. They see when a framework would help define a work related problem. The transformation of inquiry went beyond the immediate task at hand and helped to create different more capable professionals.

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