

Preparing graduate students for the responsible conduct of research:

Measuring student awareness

by

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ABSTRACT

Purpose: The purpose of this research study is to describe important aspects of graduate student training as identified through scholarly literature. This paper identifies and discusses three components of graduate student training through the following conceptual framework: data integrity; responsible assignment of authorship and publication practices; and compliance.

Methodology: This study utilizes survey research to describe graduate student preparedness in each area identified in the conceptual framework. A survey was electronically administered to current graduate students and former students who graduated from the Masters in Public Administration program at Texas State University. Because of the descriptive nature of the project, the research employs descriptive statistics to analyze the results.

Findings: Students of the Masters in Public Administration Program at Texas State University reported they were adequately prepared in virtually all of the key areas of graduate training identified in the conceptual framework, with the exception of two sub-categories: writing data management plans and assigning co-authorship. The graduate program's, "Notebook Method" potentially contributes to high level student-reported preparedness. However, further research is required in order to confirm this hypothesis.

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While listening to a speech at a FDP meeting delivered by the Inspector General of the National Science Foundation, Ms. Swaney's academic interest in the responsible conduct of research began to take shape. In particular, her interest peaked as she listened to the list of excuses collected from multiple research investigators as to why they plagiarized research funding proposals.

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CHAPTER INTRODUCTION

Before World War II, science was typically self-funded and self-governed (Shamoo and Resnick 2009). However, the Second World War gave rise to a new popular scientific revolution. During this time scientists became celebrities, and their discoveries encouraged an increase in federal and private funding. As a result, interest in research grew rapidly, and the number of scientists dramatically increased (Shamoo and Dunigan 2000).

After the 1960s scientific research exploded. The 1960s space race peaked American research. During this time, scientists not only sent man to the moon, but also engaged in all types of research, including human and animal subject research; however, some would consider this research unethical by today's standards. Scientists of that era did not respect the physical and mental aspects of human and animal research, as today's researchers do.

By the 1970s the race to the moon had ended, followed by a period of economic downturn. Reports of widespread fraud and abuse in government contracts caused the American public to become distrustful of scientists who received government support (LaFollette 2000). This heightened public recognition of social impacts of technological advances, coupled with concerns about waste and mismanagement of governmental funds, led to demands for a new level of accountability (Bulger 1994, Piantadosi 2005).

Governmental reaction to social pressures often effects change. Change is possible, particularly in situations of heightened sensitivity, when awareness of a problem (or perceived need) leads to enacted regulation (LaFollette 2000). Not until 2000, with the passage of the *Responsible Conduct of Research* (RCR) act had the United States

government regulated research enterprise to ensure researchers conduct themselves in a responsible and ethical manner.

The phrase, *responsible conduct of research*, or RCR, is defined by National Institutes of Health (NIH), as the practice of scientific investigation with integrity. Responsible conduct of research refers to the awareness and application of established professional norms and ethical principles in the performance of all activities related to scientific research (NIH 2009). This definition encompasses the federal definition of scientific misconduct (fabrication, falsification and plagiarism) as well as other questionable behaviors. Other questionable behaviors include gray areas encountered throughout the research including: properly collecting and managing data; using appropriate methodologies to analyze and disseminate research results; responsible assignment of authorship and publication practices; and encountering conflicts of interest.

Universities are required to oversee the RCR. The government-wide *Federal Research Misconduct Policy* stresses, while federal agencies have the ultimate oversight authority for federally funded research, the research institutions bear primary responsibility for prevention and detection of research misconduct (Steneck and Bulger 2007, 832). Federally mandated training is the result of the scientific community's lack of self-government. In this context, the next section reviews laws and regulations passed over the last 30 years.

Governmental Acts vs. Self-Policing

During the 1970s many known research misconduct cases alarmed the federal government, as well as the public. Congress first addressed these cases in March and April of 1981. The 1981 hearings were opened by Chairman, Albert Gore, who stated, the base of America's investment in research "lies in the trust of the American people and the integrity of the science enterprise" (LaFollette 1994, 131). Testimony revealed most universities were underprepared to respond to allegations of fraud due to an absence of policies, procedures, or definitions of "scientific misconduct" (Montgomery and Oliver 2009, 145).

Despite lingering skepticism, leaders in the scientific community convinced Congress that the community was capable of internally managing the problem through self-policing. Activists claimed misconduct was isolated and occurred on an irregular basis (Piantadosi 2005; Steneck 1994). Thus, Congressional focus remained on penalties versus preventative measures. Government policy-makers primarily defined "research misconduct" and established procedures for reporting, investigating and adjudication of misconduct allegations (Steneck and Bulger 2007).

By the mid-1980s, an obvious lack of science self-regulation led to continued reports of scientific misconduct and delays by federal science agencies who failed to provide regulatory rule-making, frustrated and angered Congress (LaFollette 1994). In 1985, Congress met and passed the Health Research Extension Act over the veto of President Reagan. This act formally directed the National Institutes of Health (NIH) and the National Science Foundation (NSF) to publish regulations requiring grantee institutions (of federal funds) to adopt and implement formal policies and procedures for

handling allegations of misconduct, and to report the outcomes of investigations in a timely manner (Burgess 1996; Steneck and Bulger 2007; Montgomery and Oliver 2009).

In spite of this legislation, institutional mishandling of allegations and delayed reporting of outcomes continued. The 1988 Congressional hearings featured harassed whistleblowers and tales of alleged cover-ups of research misconduct. To the public, the lack of jail sentences, institutional investigations, or administrative law cases appeared conspiratorial. Co-authors were not forced to accept responsibility for falsified published works (LaFollette 2000). Fellow scientists often excused the offender's behavior as an anomaly, and argued the episode was an isolated event. In other cases, scientists cited misconduct as precipitated by stress, bad judgment, or moral corruption (LaFollette 2000, 212).

The scientific press and publishing community procrastinated in developing general guidelines for authorship and reviewing practices. Scientific journals refused to retract articles, even when proof of false or fabricated data in publications existed. The journals claimed vulnerability to law suits or libel should any individual co-author object to the retraction or correction (LaFollette 2000).

Legislators lost patience with the science community's excuses failed investigations into alleged misconduct (LaFollette 2000, 213). Still, the scientific community continued to argue for policing themselves and "were taking steps to do so more effectively" (LaFollette 2000, 213). However, nothing changed.

Due to continued inaction of the scientific community, the Department of Health and Human Services (DHHS) established the Office of Scientific Integrity, later to become the Office of Research Integrity, and the Office of Scientific Integrity Review

(Steneck 2007). This two-tier organization was created to manage the problem of scientific misconduct, foster responsible conduct of research, and assure compliance with Public Health Service (PHS) regulations (Burgess 1996, 117).

Conversely, the NSF incorporated a misconduct investigatory unit within the NSF's Office of the Inspector General and stated the NSF also had an "expectation of accountability in how institutions manage their federal funding" through ethical behavior (LaFollette 2000, 214).

A Shift in Focus: Transforming the Educational Landscape in Higher Education

Responsible conduct of research training had focused on institutions and faculty with federally funded research, instead of emphasizing training of future researchers. Ironically, graduate students are vulnerable to the same kind of misconduct while performing the lion's share of bench work, especially when under-supervised, or sometimes pressured or exploited by senior researchers. While RCR training is required of all federally funded faculty and students, even students who conduct research without funding also require proper training. Therefore, it is essential that responsible conduct of research training be incorporated into overall graduate curriculum.

The Institute of Medicine (IOM) report, *The Responsible Conduct of Research in the Health Sciences*, published in 1989, recommends that universities provide formal instruction in good research practices. This instruction should not be limited to formal courses, but incorporated into various places in the undergraduate and graduate curriculum for all science students (Institute of Medicine 1989, 30; Steneck and Bulger 2007, 830).

The IOM report also places the majority of the responsibility for training on the research institutions under the direction and leadership of NIH. The IOM tasked the NIH to establish an office to promote, require assurances of, and create professional standards for responsible research practices (Institute of Medicine 1989; Steneck and Bulger 2007, 830).

Responsible conduct of research education formally came to be in 1989, when the NIH and the Alcohol, Drug Abuse and Mental Health Administration announced a change of policy to begin in 1990. All National Research Service Award (NRSA T32 and T34) institutional training grants were to incorporate into proposed research “a description of the formal or informal activities related to the instruction about the responsible conduct of research” (Steneck and Bulger 2007, 830).

The policy did not require a specific curriculum, but did suggest including topics such as: conflict of interest; data recording and retention; professional standards and codes of conduct; responsible authorship; institutional policies and procedures in handling misconduct allegations; and policies regarding the use of human and animal subjects (Steneck and Bulger 2007, 830). The policy expanded the RCR training requirement was expanded in 1992 to include pre- and postdoctoral NRSA fellows (NRSA F31 and F32). The NIH later stipulated all applications without plans for RCR instruction would be considered incomplete and returned without review.

Like NIH, NSF also implemented a RCR requirement for the Integrative Graduate Education and Research Traineeship (IGERT) program as well as a requirement for education in the protection of human research participants (Steneck and Bulger 2007).

The *Report of the Commission on Research Integrity* published in 1995 by the DHHS strongly endorsed the requirement of RCR instruction and recommended RCR training be expanded to include all individuals who perform research to be “sensitized to the ethical issues inherent in research” (Steneck and Bulger 2007, 831). The report also recommended that research institutions and professional societies play important roles in improving RCR education (Steneck and Bulger 2007, 831).

Based on the DHHS report, the Division of Education and Integrity under the Office of Research Integrity drafted a *Policy on Instruction in the Responsible Conduct of Research* and announced the intention to implement the policy in late 2000 (Steneck and Bulger 2007). The policy set important objectives and minimum requirements for research institutions to follow; however, the policy also provided flexibility for institutions to determine the content, length, level, and method of instruction. As the policy evolved, nine core instructional areas emerged. The instructional RCR program pertains to all applicable to all staff who had “direct and substantial involvement in proposing, performing reviewing or reporting research, or who receive research training supported by PHS funds” (Department of Health and Human Services 2000; Steneck and Bulger 2007, 832). The nine core areas are as follows:

1. Data acquisition, management, sharing, and ownership
2. Mentor/trainee responsibilities
3. Publication practices and responsible authorship
4. Peer review
5. Collaborative science
6. Human subjects
7. Research involving animals
8. Research misconduct
9. Conflict of interest and commitment

All institutions submitting PHS research funding grant applications in 2001 were required to certify compliance with the policy. Compliance also mandated all PHS funded staff become RCR-trained by October 1, 2003 (DHHS 2000; Steneck and Bulger 2007). The government-wide *Federal Research Misconduct Policy* also stressed while federal agencies exercise ultimate oversight authority over federally funded research, research institutions bear primary responsibility for prevention and detection of research misconduct (Steneck and Bulger 2007, 832).

Current Challenges

The literature suggests that the number of research misconduct cases may be higher than reported (Pintadosi 2005; Burgess 1996), as most published estimates on the occurrence of scientific misconduct are low. The likelihood of scientific misconduct occurrence increases as research becomes more complex and multi-disciplinary. Responsible conduct of research training is a unified method of assisting the career researcher and students-in-training to make ethical decisions when faced with challenges during the research process.

Both the individual investigator and the institution are subject to ramifications associated with scientific misconduct. Individual investigators found guilty of scientific misconduct are typically debarred from receiving any additional federal funds, or forced to pay monetary fines. However, all individuals endure scarred reputations. Likewise, the institutions are also subject debarment and monetary fines and may terminate the investigator(s) guilty of scientific misconduct.

With the primary focus of RCR education only on those individuals (faculty and graduate students) working on federally-funded research projects, the current challenge

remains to properly train those students conducting research outside of federally funded projects. The question is, how prepared do students feel to make ethical decisions during the research process? To date, no study exists in the literature that covers how prepared students feel in RCR areas.

Chapter Summary

This chapter reviews the evolution of the responsible conduct of research laws. The next chapter reviews the literature about important aspects of graduate student training needed in order to prevent misconduct in research by future researchers.

CHAPTER II

LITERATURE REVIEW

Chapter Purpose

The purpose of this chapter is to describe the importance of research responsibility training for faculty and graduate students. The literature highlights the necessity of responsible conduct of research training to counter the ethical dilemmas that plague modern research enterprise. Training in the responsible conduct of research is a unified method to equip researchers with the tools and knowledge to make sound decisions when faced with an ethical challenge. Training is most effective when it begins at the graduate student level.

Introduction

Science is the ultimate search for “truth.” Honesty and integrity are values coveted by the research profession (Bulger 1994; Biros et al. 1999; Ingham 2003; Shamoo and Resnik 2009; Steneck 2006). However, these values have been compromised by investigators reacting to the dramatic growth and increased complexity of research discovery. Some researchers may cut corners or be negligent during the research process. When a scientist’s “aberrant behaviors and actions...detract from the integrity of the quest for eternal truths,” that individual has committed research misconduct (Burgess1996, 115).

Research integrity is “the use of honest and verifiable methods in proposing, performing, and evaluating research and reporting research results, with particular attention to adherence to rules, regulations, guidelines, and commonly accepted professional codes or norms” (NIH 2007). To maintain research integrity, the federal

government regulates the research enterprise – through government agencies such as the National Institutes of Health (NIH) and the National Science Foundation (NSF) – and requires grantee recipients of federal funds to offer *responsible conduct of research* (RCR) training. The purpose of RCR training is to guide researchers on how to conduct research “that fulfill the professional responsibilities of researchers, as defined by their professional organizations, the institutions for which they work” (Steneck 2006, 55); not as defined by the federal government.

The federal government regularly issues general regulations as a minimum standard, without supporting or specific guidelines (Steneck 2006). Many elements of faculty and graduate training, including RCR, are regulated by the federal government, but the content of each topic area is left to the institution to define.

Unfortunately, acceptable research practices are not always universally understood (Burgess 1996). “For even the most obvious examples of good laboratory procedures (e.g., using ink in notebooks) a common understanding may not exist across the research community” or across an institution’s own internal culture (Burgess 1996, 122). Many institutional policies do not provide a “detailed codification of questionable or unacceptable practices” (Burgess 1996, 121).

Non-communicated standards of RCR training leave the investigator vulnerable. As the research process becomes more intricate, the possibility for error increases (Folse 1991). This increased chance of error amplifies the researcher’s chances of unknowingly committing scientific misconduct. Investigators’ reputations and careers should not be endangered because of naive violations stemming from poorly disseminated research conduct “standards” (Burgess 1996, 122). Additionally, while researchers possess the

necessary reasoning skills, they often lack the recognition of how and when to apply these skills (Kalichman 2007) when facing ethical decisions during the research process.

The value of RCR training lies in the way it provides a basic standard of training and framework for ethical decision-making. A basic standard of ethics is necessary because institutional perceptions of professional and ethical norms may vary. The ways professional and ethical norms are transmitted to graduate students vary greatly (Chubin 1985). Moreover, a basic framework for ethical decision-making is “most effective for those who want to do the right thing, but do not yet know what that is” (Resnik 2001 cited within Ingham 2003, 330).

This research identifies three broad areas within RCR have been identified as essential in graduate student training: 1) data integrity; 2) responsible authorship and publication practices; and 3) compliance.

Conceptual Framework

The conceptual framework of this research comprises from supporting literature that explains why graduate student training in responsible conduct of research is crucial, particularly in the three areas of: data integrity, responsible authorship and publication practices, and compliance. These descriptive categories also include more specific subcategories (to be discussed later in the chapter) and are articulated in Table 2.1 with a list of the supporting literature.

Table 2.1 CONCEPTUAL FRAMEWORK	
DESCRIPTIVE CATEGORY	LITERATURE
Data Integrity <ul style="list-style-type: none"> • <i>Data Collection/Data Management</i> • <i>Data Sharing</i> 	Ingham 2003, 330; Horner and Minifie 2011, 336; Biros et al. 1999, 841; Shamoo and Resnik 2009; Piantadosi 2005, 559; Office of Research Integrity 2000; Horner and Minifie 2011, 336; Grinnell 1999, 207; Piantadosi 2005; Shamoo and Resnik 2009; Biros et al. 1999; Browning 1995; Shamoo and Resnik 2009, 56; Culliton 1974; NSF GPG 11-001; Shamoo and Resnik 2009; Ingham 2003; Horner and Minifie 2011; Burgess 1996, 122; Shamoo and Resnik 2009; Horner and Minifie 2011, 337; Shamoo and Resnik 2009; Marco and Larkin 2000, 692; Marco and Larkin 2000; Mishkin 1988; Biros et al. 1999, 846; Shamoo and Resnik 2009, 51; Eastwood et al. 1996, 93; Shamoo and Resnik 2009; Campbell et al. 2002, 478; Shamoo and Resnik 2009
Responsible Authorship & Publication Practices <ul style="list-style-type: none"> • <i>Plagiarism</i> • <i>Responsible Authorship</i> • <i>Multiple Publications</i> 	Piantadosi 2005, 545; Bulger 1994; Carraway 2009; Folse 1991, 346; NSF 2011; Carraway 2009, 149; Gilmore et al. 2010, 15; Gilmore et al. 2010, 25; Bulger 2004, 57; Bulger 2004, 58; ICMJE 1991; Eastwood et al. 1996, 96; Eastwood et al. 1996, 97; Rennie et al. 1997; Bulger 1994, 59; Carraway 2009; Weltzin et al. 2006, Carraway 2009, 150; Piantadosi 2005, 552; Bulger 2004; Bulger 2004, 58; Angell 1983; Carraway 2009, 148; Carraway 2009, 152
Compliance <ul style="list-style-type: none"> • <i>Conflicts of Interest</i> • <i>Employee Management</i> 	Shamoo and Resnik 2009, 190; Shamoo and Resnik 2009, 192; Rule and Shamoo 1997, 24; Shamoo and Resnik 2009; Boyd et al. 2003; Boyd et al. 2003, 773; Boyd et al. 2003, 770; Boyd et al. 2003, 769; Boyd et al. 2003, 770; Piantadosi 2005, 559; Ingham 2003, 300; Piantadosi 2005; Kassirer 1993, 1636; Piantadosi 2005, 559; Biros et al. 1999, 843; Biros et al. 1999, 844; Burgess 1996, 123; Biros et al. 1999

Data Integrity

Data integrity is fundamental to high standards for academic research. Integrity “is essential to maintaining trust among the research community, the professionals who draw upon that research... and the public” (Ingham 2003, 343-4). Without integrity, science suffers. Knowledge cannot grow on the basis of faulty research, when the trust

placed upon science has been broken. Research funding can slow or even stop due to poor data integrity. To maintain data integrity, data first must be appropriately collected and managed, then freely shared.

Data Collection/Data Management

Reliable research results depend upon on reliable data (Horner and Minifie 2011). A researcher must be diligent and not neglect any part of the research process, including data collection and data management (Biros et al. 1999, 841). In this context, educators must adequately train graduate students in data collection and management techniques.

While managing data is critical; surprisingly, the federal government provides little specific guidance on ways to appropriately collect and manage data. One reason for a lack of guidance may be due to varying standards across academic disciplines.

Logically, university training programs should include components that address general standards in addition to discipline-specific components. Basic graduate student training should involve ways to effectively collect and manage data in the context of general norms that is and is not, acceptable, before discussing discipline-specific norms (Shamoo and Resnik 2009).

For a variety of reasons “documentation, organization, and quality control procedures for data are vital in...prevention of misconduct” (Pintadosi 2005, 559). Therefore, effective data collection and management must include accepted practices for: acquiring and maintaining research data; record keeping (Office of Research Integrity 2000; Horner and Minifie 2011, 336); and data analysis and interpretation.

Gathering incomplete or incorrect data nullifies research results. An accepted practice in collecting data means first, finalizing a sound scientific methodology (Horner

and Minifie 2011). If the research method is not rigorous because of flaws in the design, execution or analysis, “the ethics of the research study is open to scrutiny” (Horner and Minifie 2011, 336). The scientific design also reflects the type of data to be collected. These are basic research design elements that all graduate programs should cover.

However, graduate students also must be trained to manage personal emotions, as well as data. Researchers may begin to feel mounting pressure to rush publishable results when research projects take too long or derail due to unexpected deviations (Shamoo and Resnik 2009; Biros et al. 1999). Senior colleagues often pressure junior researchers and graduate students to produce results in order to keep jobs or advance careers (Browning 1995; Shamoo and Resnik 2009, 56). These pressures may cause “corner cutting” during the research process, which may lead students to compromise the integrity of data through fabrication, falsification, or omission of data from research records.

To help prevent misconduct, graduate students should learn how to effectively cope and manage mounting pressures and stresses to produce results and publications. Successful training will empower these students to take control of a situation if others encourage the students to cut corners in order to produce rapid results. Students can learn coping skills through time management seminars; project planning and management seminars; and with regularly scheduled meetings with their faculty mentor or other senior faculty members. Students can also seek guidance and network through peer groups.

Understandably, an effective training program should include basic information and resources about proper data collection strategies, appropriate data, how outside demands may affect data integrity, and effective coping strategies. Role-playing and discussions are two possible ways that may assist in preparing students for difficult

situations when they are faced with unrealistic demands by administrators or superior researchers that may encourage corner cutting. Additionally, case studies are an effective way to illustrate different aspects of the data collection challenge.

As data and results are collected, students must effectively manage and maintain the information to prevent corruption or loss. The National Science Foundation (NSF) and the National Institutes of Health (NIH) realize the importance of data management. For example, NSF requires the submission of a data management plan for all proposals (NSF 2011b). Principle researchers must make graduate students aware of NSF and NIH standards and expectations as part of a basic training program so that these standards exist during all research activities. Additionally, graduate students must know how to write a data management plan for all research projects and how to adhere to the plan as a regular part of record keeping.

Similarly, students should follow general research record and data auditing guidelines when managing data, no matter what the discipline (Shamoo and Resnik 2009). The research record is a paper trail that includes data or results produced from the research recorded in laboratory records, research proposals, journal articles, and theses (Ingham 2003; Shamoo and Resnik 2009; Horner and Minifie 2011). While most researchers are moving toward electronic record keeping, which may enhance security and efficiency, there is still a potential for data to be manipulated or cleared from the paper trail (Shamoo and Resnik 2009). Keeping an accurate paper trail is essential, because this step allocates credit and responsibility to each researcher for a segment of the research.

Furthermore, research data records should be kept for a “reasonable period of time” (Shamoo and Resnik 2009); although, the length of time those records should exist varies due to the scientific field or the program offices administering the research grant. A good rule of thumb is to retain data records for at least seven years after financial closeout or after the final publication (Shamoo and Resnik 2009). Failing to retain significant research data for a reasonable period of time may “give rise to the inference that the data [does] not [or] never did exist” (Burgess 1996, 122).

In addition to keeping adequate research records, researchers must ensure accurate data within those records. Sometimes principle investigators do not develop data methods or participate in data acquisition, because the research is conducted by a large lab where different people perform different tasks simultaneously. When principle researchers are not involved with collecting data, it is crucial that quality control measures exist and the integrity of the data is preserved by other researchers in the lab (Shamoo and Resnik 2009). Frequent data auditing prevents discrepancies between the source documents and the database, and can quickly detect any source documents missing from the data records. Regularly conducting data auditing of graduate student research should be a part of the graduate training experience, as these steps illuminate accidental errors, as well as eliminate intentional deviations.

Data analysis and interpretation are topic areas whereby investigators may knowingly or unknowingly commit scientific misconduct, especially if investigators are inexperienced. The “misunderstanding, mismanagement, and misuse of statistics are major problems in the biomedical and behavioral literature” (Horner and Minifie 2011, 337). The complexities of data analysis can easily allow for bias or other errors in the

analysis and interpretation of the data (Shamoo and Resnik 2009). Some statistical analysis techniques are more scientifically valid and ethical than others (Marco and Larkin 2000, 692). Advanced determination of statistical techniques prior to data collection encourages the most scientific and ethical analysis and reporting methods (Marco and Larkin 2000).

Graduate student training must focus on proper statistical analysis techniques to ensure trustworthy results. Although statistics often part of a core curriculum of graduate student training, additional advanced methodology training is essential. Also, regular use and practice of appropriate statistical methods under close supervision will aid students in identifying the appropriate methods necessary for analysis and understanding how inappropriate methods may produce faulty results.

Researchers must also consider the legal aspects of data management. For example, submitting false information in a grant application for federal funding is considered a felony and punishable with a fine up to \$10,000 and/or imprisonment for up to ten years (Mishkin 1988; Biros 1999, 846). Educators should teach graduate students legal consequences during training to help deter misconduct during research activities.

Based on the scholarly literature, university training programs for graduate students should include: accepted practices for data collection and management, including coping with the emotional stress; record keeping and data auditing; advanced statistical analysis and methodology; and legal implications.

Data Sharing

Data sharing promotes the advancement of knowledge by making information publicly known. Sharing data allows for replication; criticism and feedback by other

researchers; building and maintaining a culture of trust; cooperation; and collaboration. Data sharing also builds public support by demonstrating openness and trustworthiness of the researcher (Shamoo and Resnik 2009, 51). Data should be shared and made available to anybody who wishes to review or use the data.

In a survey conducted by Eastwood, et al., eighty-one percent agreed researchers should make research materials available to all interested academic scientists (1996, 93). However, many researchers do not wish to share data outside of private collaborations, because the participants wish to protect intellectual property or claim first rights for discoveries and publishing (Shamoo and Resnik 2009). Therefore, adequate graduate training must address specific aspects of data distribution, as identified in the research, in respect to the consequences of withholding information and when it is and is not, appropriate to withhold that information.

In a study, genetic researchers reported they were unable to replicate a published research project due to scientists' unwillingness to share information, data, or materials (Campbell et al. 2002, 478). Also, fewer of today's researchers, thirty-five percent or less, are willing to share data than those investigators from over a decade ago (Campbell et al. 2002, 478). Likewise, requests for data from the original researcher are more likely to be denied if the researcher has engaged in commercial activities (Campbell et al. 2002, 478).

Many times considerable effort and money are involved in producing materials or information. Regardless, graduate students must understand there is still an obligation to share that information. The survey conducted by Campbell et al., also cited several reasons as the basis for denial to requests for information. Eighty percent of the

researchers reported sharing of information required too much effort on the part of the original researcher (Campbell et al. 2002, 478). Forty-five percent reported the cost of providing the materials or information transfer was a significant financial burden (Campbell et al. 2002, 478).

Additionally, sixty-four percent of the researchers surveyed did not share data in order to protect to protect graduate student's, postdoctoral fellow's or junior faculty's ability to publish. Fifty-three percent of the researchers did not share data to protect their own ability to publish (Campbell et al. 2002, 478).

There are a multitude of other reasons to refuse to share data or materials; however, data should only be temporarily withheld (Shamoo and Resnik 2009). Graduate students must be made aware, through training, of the need to share data as a researcher so data and results may be validated through replication. Students must also prepare for road blocks as they try to access data from other scientists and to understand that, while others may be protecting their own or someone else's interests, the data should be made available at some point.

Effective training in the area of data sharing could be accomplished by engaging students in small group discussions to identify areas within real and hypothetical case studies in which sharing data or withholding data for a period of time is appropriately examined. Faculty mentors should be present at those trainings to address questions and to share real-life professional experiences.

Responsible Authorship and Publication Practices

Dissemination of results through publication is an important aspect of research and conveys the methods and findings of research studies. Publications of new findings

build on existing knowledge; however other aspects of publishing may undermine scientific progress. These aspects should be addressed in graduate level training. Topic areas include plagiarism, the responsible assignment of authorship, and the topic of multiple publications.

Plagiarism

Plagiarism is the most reported and easily identified type of scientific misconduct (Piantadosi 2005). Though learning how to properly cite literature should be a part of basic graduate student training, plagiarism continues to occur. Plagiarism accounts for at least thirty percent of the misconduct allegations reviewed by NSF annually (NSF 2011a). Whether it happens intentionally or unintentionally, the federal government considers plagiarism scientific misconduct, often referred to as theft by the scholarly literature (Bulger 1994; Carraway 2009).

Typically, the occurrence of plagiarism is accidental due to improper citations or absence of references. Minimizing unintentional error is important. Students can minimize plagiarism with appropriate training and guidance and preparation (Folse 1991). Basic graduate student training must emphasize that even something as simple as changing punctuation or a word from the original publication to another is not acceptable writing practice (Carraway 2009).

Without explicit, elementary instruction on how to paraphrase; for example, graduate students generally will not understand proper citation methods or what constitutes plagiarism (Gilmore et al. 2010). An important skill for students to have (especially when conducting dissertation research) is the ability to locate, critique, and

synthesize primary literature (Gilmore et al. 2010, 15). It is imperative, through training, students learn how to properly cite literature and correctly credit authors.

Training should focus on the importance of proper citation. Seminars, on-going discussions with faculty mentors, and changes in programmatic efforts in the discipline all help to reduce plagiarism (Gilmore et al. 2010). A one-time, online training is insufficient to prevent unintentional plagiarism by students. Instead, on-going conversations are required throughout the paper writing process. Regular checks of students' notes on articles will minimize the occurrence of plagiarism, as well.

Responsible Assignment of Authorship

Authorship is a central aspect to publishing and should be taken seriously. Responsible assignment of authorship gives the individual scientist credit for the work as well as responsibility for the research. Authorship records the scientist's accomplishment as a "measure of one's scientific performance", and allows work to be replicated, validated, and built upon by others (Bulger 2004, 57).

The method to determine authorship fluctuates based on the scientific discipline and journals. In 2001, the International Committee of Medical Journal Editors (ICMJE) published *Uniform Requirements for Manuscripts Submitted to Biomedical Journals* (Bulger 2004, 58). The ICMJE requires that three criteria be met before the right to authorship can be claimed: 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published (ICMJE 1991).

This definition of authorship gives credibility and responsibility to those persons performing the work. Many co-authors, such as graduate students, postdoctoral fellows or junior faculty are never acknowledged in a publication for their contributions to the publication or the research project. This practice is called ghost authorship. In a survey, some postdoctoral research fellows claim to have been wrongly omitted as an author from a paper (Eastwood et al. 1996, 96).

On the other hand, sometimes undeserving authors are given credit on a publication when credit is not deserved (honorary authorship). More than one third of postdoctoral research fellows surveyed reported that they had granted (or been asked to grant) someone co-authorship who did not deserve it (Eastwood et al. 1996, 97). Additionally, more than forty percent of the respondents reported they were included as an author on a paper for which there was a third co-author who did not deserve authorship (Eastwood et al. 1996, 97).

The criterion used in the above referenced study was different than the criterion set forth by ICMJE. The study concludes that the ICMJE criterion for authorship has not been universally adopted. Effective graduate student training must use ICMJE standards as the baseline guidance for identifying those that deserve authorship.

The literature suggests that instead of granting authorship, standard practice should utilize an acknowledgment section for those who deserve some credit. Non-authors who potentially deserve credit could be those who provided resources or assisted with the work, (e.g., advice or manuscript review) (Rennie et al. 1997; Bulger 2004; Carraway 2009). Each author on a multi-authored publication is not only responsible for a portion of the manuscript, but for the work included by other authors (Weltzin et al.

2006; Carraway 2009). Subsequently, if the work performed by one person is fraudulent, then all co-authors are responsible for the fraudulent work.

A good example of this is the case of misconduct by Dr. John Darsee of Harvard University. Darsee was found to have fabricated data dating back to his undergraduate days at Notre Dame University. At least seventeen published papers and fifty-three abstracts written or co-authored by Darsee were retracted because of fraud or fabrication (Piantadosi 2005, 552). Darsee's co-authors often had too little contact with the researcher to realize the fabrications had occurred (Piantadosi 2005). At other times, Darsee assigned co-authorship to authors without their knowledge. Darsee often insisted upon authorship status over the co-author's objections because "they had been helpful [to him] in the past" (Piantadosi 2005, 552).

As this example suggests, it is important that graduate students be aware of what qualifies as authorship, and the ramifications surrounding authorship. During training, students should understand when to grant and receive authorship appropriately and understand other mechanisms for when to issue credit acknowledgement.

Multiple Publications

A final aspect of responsible publication practices that should be included in graduate student training programs (but typically is not) is the topic of multiple publications. Students must be aware of publication norms. The current publishing environment encourages publishing an entire intellectual piece of work, as opposed to publishing numerous small papers, referred to as "least publishable units" or "salami slicing" science, which is highly discouraged and criticized (Bulger 2004).

Likewise, using the same material in multiple publications is lavish and must be avoided (Bulger 2004). It is important for students to understand that although more than one paper may result from a research project, each paper must contain a “reasonable unit of knowledge” (Angell 1983; Carraway 2009, 148). It also is unacceptable to modify the text or supporting materials of a manuscript and then republish in multiple journals on the premise of reaching a wider audience (Carraway 2009). Should the publication need to reach a wider audience, the author should submit the article to a widely distributed journal (Carraway 2009).

Graduate training should address publishing norms surrounding multiple publications. A career in research is often based on the requirement “publish or perish.” With pressure to publish as many articles as possible, it is important that training at the graduate student level include publication norms. Students must understand it is not acceptable to “salami slice” science results in order to publish as many papers as possible.

Based on the literature, graduate student training should focus on areas of responsible authorship and publication practices, specifically, regarding plagiarism. Responsible assignment of authorship and multiple publications training will equip students with information necessary to avoid scientific misconduct or questionable behaviors during research careers.

Compliance

Data integrity and plagiarism are covered in every graduate program. Issues of responsible authorship and publication practices are included on the faculty agenda.

However, some issues of compliance are not at the center of graduate training or faculty interest.

Compliance in areas such as human and animal subjects is regularly taught in graduate student programs. For example, it is considered scientific misconduct to conduct a study involving humans and animals without obtaining approval or following an approved protocol by the appropriate committee.

Typically, areas in compliance are not addressed until after funding has been obtained. The manner in which researchers must address compliance areas can be lengthy and time consuming. Therefore, it is essential that graduate students be given a general understanding of these topics through graduate training - *prior* to obtaining research funding.

Conflict of Interest

Conflicts of interest arise when personal interests “undermine duties relating to scientific objectivity” (Shamoo and Resnik 2009, 190) and prevent the researcher from fulfilling their professional, ethical, and/or legal obligations (Shamoo and Resnik 2009). Conflicts of interest may be based on either financial or intellectual considerations or a combination of the two (Bulger 1994). These conflicts can affect any part of the research process (Shamoo and Resnik 2009). In theory, conflict of interest is easy to define but much harder to identify (Shamoo and Resnik 2009).

For example, it is not always clear in academia when it is appropriate for industry funds to be accepted and utilized by universities for research (Rule and Shamoo 1997). The general public often is suspicious of investigator relationships with industry. The

concern lies with the influence industry may have on the investigator or on the researcher's objectivity.

Conflict of interest is not synonymous with scientific misconduct; however, this conflict can lead an investigator to commit scientific misconduct. Actual conflicts of interest may motivate certain behavior or cloud the investigator's thinking. Investigators often are unaware or may simply deny a conflict. The researcher may try to overcome the conflict but often succumb to pressures, biases or temptations and lose neutrality (Shamoo and Resnik 2009).

Researchers' awareness of institutional conflict of interest policies, opinions of those policies and general attitudes about academic-industry relationships are poor (Boyd et al. 2003). A study reported that fewer than half of clinical research investigators at top research universities could accurately state their institution's conflict of interest policy even though the policy was easily accessible via universities' websites and dedicated staff to enforce those policies (Boyd et al. 2003). Furthermore, the investigators stated that lack of knowledge about the conflict of interest policies was evidence that the investigators did not have any conflicts of interest (Boyd et al. 2003). Obviously, these results are of great concern because administrators rely on faculty members to self-disclose outside relationships to the institution.

The potential for "bias, pressure, and conflict is relevant to *all* investigators [who have] industry relationships" (emphasis added; Boyd et al. 2003, 769). To prevent the appearance of impropriety, disclosures are needed even if no true conflict exists. Thus, it is important that graduate students learn how to accurately identify a potential conflict and to know how to properly disclose a relationship to an institution.

In order for institutional conflict of interest policies to be effective, researchers must be aware of and understand the requirements of the policy (Boyd et al. 2003). Initial exposure to these policies should occur during graduate level training. Training should provide students with an institutional definition and on-going conversation of what constitutes a potential conflict of interest through case studies and discussions. Additionally, effective training will include current institutional policies and will provide a campus contact for questions.

This early training is appropriate as it will supply researchers with a base knowledge to identify institutional policies away from the home institution. This training also helps investigators recognize potential conflicts of interest and what to do when it occurs.

Employee Management

The area of employee management is critical to successful research. Employee management as a training topic is often neglected. Instead, research training often focuses solely on compliance and appropriate conduct in research. Graduate student training often fails to properly train students how to supervise and manage lab and research project staff.

As graduate students transition into full time research positions, these researchers are suddenly supervising personnel who conduct research on a project and work in the researcher's laboratory. New managers are often overwhelmed by supervising responsibilities. Managers must: be well versed in human resources such as fair hiring and firing practices, managing difficult employees and office conflicts; ensure proper employee training; and motivate employees, encourage teamwork, and help individuals

grow professionally. Ultimately, supervisors must handle suspicions of misconduct and know how questionable behavior may affect research results.

A first step in establishing a research lab is hiring staff to run the lab and conduct research. Understanding fair and ethical interviewing and hiring standards will result in successful hires. Graduate training seminars on human resources should include how to select candidates for an interview, how to conduct the interview, and how to offer a position to a candidate. These hiring skills will equip young researchers with knowledge they need when hiring staff members.

Additionally, a human resources seminar or course will provide graduate students with a general knowledge of human resources offices within an institutional setting. The course should also provide helpful information such as how to write a coaching memo, or to discipline difficult or insubordinate employees within the confines of institutional policies or the law; and how to effectively address office conflict.

Proper technical and ethical training of project employees responsible for data is essential to avoid potential ethical issues (Piantadosi 2005). People inadequately trained for a job may be the first link to unethical conduct (Ingham 2003). It is also important that research staff do not work alone or without adequate supervision (Piantadosi 2005).

Adequate supervision entails providing laboratory procedures for data entry, checking, and storing; as well as being actively involved in data analysis and interpretation for all papers submitted for publication (Kassirer 1993). Additionally, subordinates should not be overworked or placed under “undue pressures to meet performance guidelines” (Piantadosi 2005, 559).

Researchers often unintentionally supervise research technicians inadequately. Researchers may be too busy with other activities to attend to minor details of the research (Biros et al. 1999). Investigators who are well known and well published often become popular mentors and may find themselves mentoring too many novice investigators without the ample resources to maintain a “close and critical eye on all that goes on within their research purview” (Biros et al. 1999, 843).

A “close and critical eye” is necessary to identify suspicious behavior, such as extraordinary productivity, (i.e., productivity out of proportion to the level of training and experience of the investigator) (Biros et al. 1999, 844). For this reason, supervising too many people and projects in a lab and providing inadequate about proper procedures may qualify as “questionable practices” or research misconduct (Burgess 1996, 123).

An effective manager empowers staff to grow professionally by motivating productivity and encouraging teamwork. Attending seminars about motivational techniques as a graduate student will equip the student with skills to increase employee morale and employee retention. Seminars teach students to create a career path and advance professionally. A faculty and industry expert panel should be included in seminars to provide students with real-life examples.

Ultimately, graduate students must be aware of potential supervisory responsibilities in the laboratory such as the researcher’s accountability for staff behavior during all aspects of research data collection, analysis and reporting (Biros et al. 1999). As supervisor, researchers fall under are subject to intense scrutiny should any questionable behavior affect research results. When these situations arise, researchers

must be equipped with coping strategies to manage the stress and pressure of an investigation while continuing to manage a functional lab.

Coping strategies arise from discussions with faculty mentors during challenging times during a student career. Workshops and seminars offered by the institutional counseling services, such as time management and project management, also may teach coping skills. Faculty mentors should be aware of such offerings and encourage students to attend.

Based on the literature, compliance issues such as conflict of interest and adequate employee management must be a clear element of graduate student training to ensure research integrity and career longevity for both the investigator and project staff.

Chapter Summary

This chapter describes the conceptual framework of important aspects of RCR graduate student training. The three descriptive categories of the conceptual framework are: data integrity; responsible assignment of authorship and publication practices; and compliance.

CHAPTER III METHODOLOGY

Chapter Purpose

The purpose of this chapter is to present the methodology employed by the research to describe graduate student awareness of important aspects of responsible conduct of research, as indicated by the literature review. This chapter discusses the methodology for collecting and analyzing data, as well as identifies the strengths and weaknesses of the applied methodologies.

Survey Research

This study uses survey research to determine the importance of different elements of graduate student training and how those elements enhance student preparation for a career in research. Survey research is a method which “offers the possibility of making refined descriptive assertions” about a general, larger population otherwise too large to directly observe (Babbie 2007, 276).

Conducting surveys makes large samples feasible (Babbie 2007) as surveys are generally inexpensive and easy to administer to a large population. Conducting direct interviews is time intensive and prohibits the use of a large population. Additionally, surveys allow many questions on a given topic, providing depth and breadth of coverage of the issues, and true attitudes (Babbie 2007). The use of uniform questions standardizes the measurements and increases reliability compared to interviews in which data are subjective and therefore less reliable (Babbie 2007).

However, standardized questions cannot create an “entire picture” or account for each personal experience. Surveys do not assess people’s attitudes, circumstances, or

experiences (Babbie 2007). Forcing responses using closed-ended questions means respondents may be “fitting the round peg into the square hole” (Babbie 2007, 276). Accordingly, while reliable, the survey method may not be valid.

Validity may be affected by low participation and response rates. Low participation and response rates affect the validity of the research by offering research results that may not represent the population. Furthermore, surveys threaten validity by creating artificiality (Babbie 2007). Artificiality occurs when survey questions cause a shift or create an attitude about the topic. In particular, artificiality in this study could affect respondent answers.

Online Survey Distribution

Based on the literature review, specific elements of each of the major descriptive categories are important in preparing graduate students in responsible conduct of research. A survey is the most appropriate methodology, electronically conducted it is the most cost and time efficient approach.

Sample

In order to maximize sample size, the survey was sent to students who currently are enrolled in, or have already completed, the Masters of Public Administration program at Texas State University – San Marcos. Students and alumni selected to participate in the study were those with an active electronic e-mail address on file with the department. An e-mail was sent to 566 participants (164 currently enrolled students; 402 post-graduate students) with a link to access the electronic survey. A total number of 112 individuals participated in the study. The next section briefly discusses each of the

categories of the conceptual framework and presents the question used to measure student opinions.

Operationalization of the Conceptual Framework

This section discusses the operationalization of each category of the conceptual framework through survey questions. A series of questions attempt to ascertain students' perceptions about receiving adequate preparation in various areas of research education and training. The questions are based on a five-point Likert scale or on dichotomous yes/no questions.

Data Integrity

Data integrity in the context of this study refers to collecting, maintaining, and sharing data without changing the original state of the data. A well-developed graduate student training program includes course materials on the basic concepts of data collection and management, and data sharing; however, different dimensions of training are necessary to properly prepare graduate students to protect data integrity. To measure the effectiveness of these approaches, current and post-graduate students of the Masters of Public Administration program at Texas State University were asked specific questions about the school's graduate training.

Specifically, respondents were asked about basic instruction and elements beyond basic instruction for data management, collection, and sharing. Basic instruction elements encompass, for example, whether students are taught to write a data management plan or taught to effectively collect and manage data. Additionally, respondents were asked if they learned how to conduct statistical analysis without

committing violations of key assumptions associated with various statistical methods.

Specifically, students were asked the questions in Table 3.1.

Table 3.1 Survey Questions for Data Collection/Data Management	
SURVEY QUESTIONS	
	<ul style="list-style-type: none">• Has your training (either in coursework, training, or special classes) prepared you to:<ul style="list-style-type: none">○ Understand of the scientific method?<ul style="list-style-type: none">▪ Yes▪ No○ Write a data management plan?<ul style="list-style-type: none">▪ Yes▪ No○ Write a project management plan?<ul style="list-style-type: none">▪ Yes▪ No○ Properly maintain research data and records after data collection?<ul style="list-style-type: none">▪ Yes▪ No○ Properly manage data?<ul style="list-style-type: none">▪ Yes▪ No○ Conduct advanced statistical analysis and not commit any violations of key assumptions associated with various statistical methods?<ul style="list-style-type: none">▪ Yes▪ No
	<ul style="list-style-type: none">• My graduate training adequately prepared me in proper data management.<ul style="list-style-type: none">▪ Strongly Agree▪ Agree▪ Neutral▪ Disagree▪ Strongly Disagree

- My graduate training adequately prepared me in proper data analysis.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
- My graduate training adequately prepared me in writing a data management plan.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
- My graduate training adequately prepared me in how to keep appropriate records during and after data collection.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

In addition to basic instruction, respondents were asked about accompanying training elements to help protect data integrity. One example is whether students learned to develop good coping skills when conducting research. As a person begins to feel stress to produce results, they may find it very tempting to cut corners. To assess students' ability to create and enhance coping skills, respondents were asked if they learned how to effectively manage time during the program and how to manage a project by first writing a project management plan. Additionally, respondents were asked if participation in peer networking groups helped them cope with the stress of research work. Table 3.2 illustrates questions regarding coping skills.

Table 3.2 Survey Questions for Coping Skills	
SURVEY QUESTIONS	
<ul style="list-style-type: none"> • Has your training (either in coursework, training, or special classes) prepared you to: <ul style="list-style-type: none"> ○ Effectively manage your time? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ Cope with stress associated with research work? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ Participate in peer network groups? <ul style="list-style-type: none"> ▪ Yes ▪ No • My graduate training adequately prepared me in how to cope with the stress of doing research. <ul style="list-style-type: none"> ▪ Strongly Agree ▪ Agree ▪ Neutral ▪ Disagree ▪ Strongly Disagree 	

Role-playing and case students are important delivery methods to enhance data integrity. However, due to limitations questions about role-playing exercises, and the use of case studies and group discussions were not asked.

Lastly, respondents were asked about knowledge regarding data sharing. Specifically, students were asked if they felt adequately prepared as to why it is important to share data with other researchers (see Table 3.3).

Table 3.3 Survey Questions for Data Sharing
SURVEY QUESTIONS
<ul style="list-style-type: none"> • My graduate training adequately prepared me in knowing why it is important to share data with other researchers. <ul style="list-style-type: none"> ▪ Strongly Agree ▪ Agree ▪ Neutral ▪ Disagree ▪ Strongly Disagree

Responsible Assignment of Authorship and Publication Practices

Responsible assignment of authorship and publication practices includes a discussion about plagiarism, assignment of authorship and multiple publications. As plagiarism continues to be an issue at the national level, as evidenced by the 2011 National Science Foundation (NSF) report, respondents were asked if they had been adequately trained to properly cite scholarly literature (see Table 3.4).

Table 3.4 Survey Questions for Plagiarism
SURVEY QUESTIONS
<ul style="list-style-type: none"> • Has your training (either in coursework, training, or special classes) prepared you to: <ul style="list-style-type: none"> ○ Properly cite literary works? <ul style="list-style-type: none"> ▪ Yes ▪ No • My graduate training adequately prepared me in how to cite scholarly literature. <ul style="list-style-type: none"> ▪ Strongly Agree ▪ Agree ▪ Neutral ▪ Disagree ▪ Strongly Disagree

Typically, graduate students are not aware of how to assign authorship once they are ready to send a paper for publication. Respondents were questioned about the adequacy of training in this area (see Table 3.5).

Table 3.5 Survey Questions for Responsible Authorship	
SURVEY QUESTIONS	
<ul style="list-style-type: none"> • Has your training (either in coursework, training, or special classes) prepared you to: <ul style="list-style-type: none"> ○ Assign authorship to publications? <ul style="list-style-type: none"> ▪ Yes ▪ No • My graduate training adequately prepared me in how to properly assign authorship. <ul style="list-style-type: none"> ▪ Strongly Agree ▪ Agree ▪ Neutral ▪ Disagree ▪ Strongly Disagree 	

Another area typically is not addressed by graduate training programs is preparation of multiple publications. However, due to limitations, questions about multiple publications were not asked.

Compliance

Graduate programs typically do not teach compliance in terms of conflict of interest and employee management in graduate training programs. Students were polled to determine if conflict of interest was a part of the graduate training program at Texas State University. Specifically, respondents were asked if they learned how to define and identify potential conflicts of interest, and whether students were aware of available resources provided by Texas State University to resolve a potential conflict of interest (see Table 3.6).

Table 3.6 Survey Questions for Conflicts of Interest	
SURVEY QUESTIONS	
	<ul style="list-style-type: none"> • Has your training (either in coursework, training, or special classes) prepared you to: <ul style="list-style-type: none"> ○ Define what a conflict of interest is? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ How identify a conflict of interest? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ Resolve a conflict of interest by using campus resources available to help you? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ Did you learn about conflict of interest through case studies? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ Did you learn about conflict of interest through role-playing? <ul style="list-style-type: none"> ▪ Yes ▪ No • My graduate training adequately prepared me in how to identify a conflict of interest. <ul style="list-style-type: none"> ▪ Strongly Agree ▪ Agree ▪ Neutral ▪ Disagree ▪ Strongly Disagree

Lastly, the survey asked respondents about employee management. Table 3.7 displays questions asked that explore students' level of preparedness in the area of employee management.

Table 3.7 Survey Questions for Employee Management
SURVEY QUESTIONS
<ul style="list-style-type: none"> • Has your training (either in coursework, training, or special classes) prepared you to: <ul style="list-style-type: none"> ○ Manage employees? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ Fair hiring techniques? <ul style="list-style-type: none"> ▪ Yes ▪ No ○ Firing practices? <ul style="list-style-type: none"> ▪ Yes ▪ No • My graduate training adequately prepared me in how to manage employees? <ul style="list-style-type: none"> ▪ Strongly Agree ▪ Agree ▪ Neutral ▪ Disagree ▪ Strongly Disagree

Human Subjects Protection

This research project was exempted by the Institutional Review Board (IRB) at Texas State University under 45 CFR, Part 46, Sec. 101(b)(1). The exemption certificate is included in *Appendix D*. This study fulfills Exemption 1 as research conducted in an educational setting that evaluates education instruction of the Masters in Public Administration program.

No personally identifiable information regarding the courses/learning outcomes of the human subjects was relevant to the study or included in the study results. The participant completed a consent form (see *Appendix E*) prior to participation in the study. A web survey (see *Appendix A*) was conducted once subjects gave consent. The

participant had the right to refuse to answer any questions or terminate the study by closing the browser window at any time during the study.

Chapter Summary

The purpose of this chapter is to review the research methodology as applied to this research project. The research methodology used in the research as well as methodology strengths and weaknesses are identified as part of this chapter.

Operationalization of the conceptual framework, through survey questions is displayed in Tables 3.1-3.7. Lastly, this chapter discusses the human subject protection protocol as relevant to this study.

CHAPTER IV

RESULTS

Chapter Purpose

The purpose of this chapter is to analyze the results of the survey. Descriptive statistics were used to analyze the results due to the descriptive nature of this project. The next section discusses the frequencies of responses to the survey.

Results

Current and poste-graduate students in the Masters of Public Administration (MPA) program were asked to respond to an online survey available for one week. A total of 566 emails were sent. During that time, 112 valid responses were recorded; however, only eighty-three responses were analyzed. Results were limited to those students in their last nine credit hours (n=23) or who had graduated from the MPA program (n=60) (see Table 4.1). The research analyzes the results using descriptive statistics reflected as frequencies. The next section discusses the results of the survey as related to data integrity; responsible authorship and publication practices; and compliance.

Table 4.1 Respondents' Number of Credit Hours				
Student	0-12 Credit Hours	15-30 Credit Hours	30-39 Credit Hours	Graduated
N=112	14.3%	11.6%	20.5%	53.6%

Data Integrity

One of the most important ways to promote data integrity in research is to train students in proper research methods and values. A majority of students noted the program trained them through their coursework to understand the scientific method

(93%), how to write a project management plan (69%), understand the importance of sharing data (70.6%), and conduct statistical analysis without committing violations to key statistical assumptions (64%). A large majority of the respondents (88%) agreed or strongly agreed that they received adequate training to properly maintain research data and records after data collection (see Table 4.2).

A large majority of students reported they were trained how to effectively manage time (83%). A lack of time management skills often leads to shortcuts in research, thereby harming data integrity. Interestingly, students reported learning to cope with the stress associated with research through graduate training (70%). Additionally, students agreed or strongly agreed they were adequately prepared to cope with the stress associated with research work (61%) (see Table 4.2).

Peer networking groups helped students cope with research challenges. Students agreed or strongly agreed that peer networking enhanced coping skills (65%) (see Table 4.2).

Table 4.2 Student Preparedness in areas of Data Integrity		
Survey Questions	N	% Yes Responses
Has your training (either in coursework, training, or special classes) prepared you to:		
Understand the scientific method?	81	93%
Write a project management plan?	81	69%
Effectively manage your time?	81	83%
Cope with stress associated with research work?	80	70%
Properly maintain research data and records after data collection?	80	88%
Properly manage data?	79	89%

Conduct advanced statistical analysis and not commit any violations of key assumptions associated with various statistical methods?	80	64%
Survey Questions	N	% Responses Strongly Agree or Agree
Peer Networking has enhanced my coping with research challenges.	70	65%
My graduate training adequately prepared me in proper data analysis.	79	72%
My graduate training adequately prepared me in how to cope with the stress of conducting research.	79	61%
My graduate training adequately prepared me in how to keep appropriate records during and after data collection.	78	72%
My graduate training adequately prepared me in knowing why it is important to share data with other researchers.	78	71%

Overall, students felt trained and adequately prepared. Adequately prepared students are less likely to have lapses in judgment causing a breakdown in data integrity; however, one very important area suggested a problem. The frequency of responses was split whether students felt adequately trained to properly manage data or write a data management plan (see *Appendix B*). This split could be attributed to poor wording of the question or indicate the respondent did not understand the definition of data management.

Responsible Authorship and Publication Practices

Proper citing of the literature is an important aspect of responsible publication practices to prevent the common problem of plagiarism. Graduate students and authors know copying the work of others violates research ethics; however, a grey area exists. For example: paraphrasing; whether or not to cite literature about major concepts; and more subtle aspects of citing the literature such as changing a sentence's wording, all constitute plagiarism if not appropriately cited. A significant amount of students

responded the graduate training adequately prepared them to properly cite literature (90%).

On the other side of the issue is the assignment of authorship on co-authored projects. While graduate students do not face this issue very often, some may face this issue in professional careers or in continued graduate education. For example, a postdoctoral student may give co-authorship to a dean or chair, even though the dean/chair did not review the manuscript or perform any work on the project. According to International Committee of Medical Journal Editors (ICMJE) standards, the above example would not be an appropriate assignment of co-authorship. Still, MPA students responded they had been trained how to assign authorship on publications (64%) (see Table 4.3).

Table 4.3 Student Preparedness in areas of Responsible Authorship and Publication Practices		
Survey Questions	N	% Yes Responses
Has your training (either in coursework, training, or special classes) prepared you to:		
Properly cite scholarly literature?	78	92%
Assign authorship to publications?	78	64%
Survey Questions	N	% Responses Strongly Agree or Agree
My graduate training adequately prepared me in how to cite scholarly literature.	77	90%

Compliance

Compliance areas such as conflict of interest and employee management often are not covered in graduate training programs. However, the vast majority of MPA students reported they had been trained how to define a conflict of interest (82%) and how to

identify a conflict of interest (83%). Students reported they learned more about conflict of interest through case studies (62%) than role-playing (37%) (see Table 4.4). However, students did not seem to know what resources are available on campus to assist in resolving a conflict of interest. Only half of respondents knew what campus resources were available to resolve a conflict of interest (55%). The cause of this variation could be due to a number of factors.

One factor could be the question was unclear. Another factor could be some students are aware of campus resources available to aid with a potential conflict from sources outside of their training. Other students simply may have assumed resources are available on campus. Nevertheless, the MPA program should articulate campus resources when discussing conflicts of interest to familiarize students with resources on campus even when not at Texas State University.

Lastly, students often are not trained how to adequately manage employees, particularly in a research setting. Respondents from the MPA program reported they had adequately been trained how to manage employees (61%) and trained in fair hiring practices (74%) and firing practices (63%). Table 4.4 displays the results of student preparedness in the areas of compliance.

Table 4.4 Student Preparedness in areas of Compliance		
Survey Questions	N	% Yes Responses
Has your training (either in coursework, training, or special classes) prepared you to:		
Define what a conflict of interest is?	77	82%
How to identify a conflict of interest?	76	83%
Did you learn about conflicts of interests through case-studies?	76	62%

Did you learn about conflicts of interests through role-playing?	76	37%
Has your training (either in coursework, training, or special classes) prepared you to:		
Manage employees?	77	73%
Fair hiring practices?	76	74%
Firing practices?	76	63%
Survey Questions	N	% Responses Strongly Agree or Agree
My graduate training adequately prepared me in how to identify a conflict of interest.	77	71%
My graduate training adequately prepared me in how to manage employees.	77	61%

Chapter Summary

This chapter analyzes the results of the survey. Overwhelmingly, students felt the MPA program adequately prepared students to protect data integrity, about responsible authorship and publication practices, and about compliance. However, possibly due to unclear questions, respondents were divided regarding how to write a data management plan, assign authorship to co-authors, and resolve a conflict of interest utilizing campus resources.

CHAPTER V CONCLUSION

Chapter Purpose

This chapter makes recommendations for other public administration graduate program and for the Masters of Public Administration (MPA) at Texas State University. Suggestions for future research are also provided.

Recommendations to Other Graduate Programs

The issue of scientific misconduct remains on the federal and academic agenda. The public has become more aware of the impact research has on their lives, and want to know how tax dollars are spent. As a result, the United States government requires additional accountability in research. When instances of scientific misconduct occur, trust is lost by the research enterprise and research funding is jeopardized. Research institutions and individual scientists must recognize the importance of RCR training regulation and embrace the responsibility to ensure successful careers of future scientists and a future knowledge base.

While problems have been identified, solutions have not. It is clear that solutions do not lie in enrichment activities, seminars, or other ancillary graduate student training. The solution lies in integrating resources into curriculum. This study of Texas State University – San Marcos, Masters of Public Administration program uses comprehensive research training.

Students self-reported high knowledge in the areas of data integrity, responsible authorship and publication practices and compliance, perhaps providing direction for future programs. As presented by the research, the Masters of Public Administration

program has taken steps to adequately prepare graduate students for careers in research. The Notebook Method and conceptual framework approach introduced during the Applied Research Project classes (and integrated into the curriculum) may produce the high level of student preparedness. Therefore, areas of project management, citing, time management, and coping with stress associated with conducting research are addressed by the MPA program. The Notebook Method (Shields 1998) focuses on conducting a literature review for a scholarly research project-and is an “inquiry tool” that assists students with project management and time management (Shields 1998, 200).

Interestingly, students who used the Notebook Method report using the method for other project planning in work and personal activities (Shields 1998). Additionally, in assignments involving the Notebook, students are forced to begin working earlier on projects and on the detailed things-to-do list, which keeps students on track (Shields 1998). Lastly, extensive note taking reduces the likelihood of plagiarism as students are often required to turn in notes during the course of the class. Student anxiety lessens as the construction of a well-organized notebook encourages content mastery (Shields 1998).

Consequently, the Notebook facilitates the creation of a conceptual framework and is utilized by students to organize research (Shields 1998). Conducting a literary review is a daunting task. The conceptual framework helps builds the research project by first grouping similar topics from the literature and linking the research purpose to related research questions, methodologies/techniques, and statistics (Shields 1998, 202). Once the conceptual framework has been created, the student then is able to use it to operationalize the research. It is the methodology that directs the researcher during the

research process and helps protect data integrity. Therefore, the conceptual framework approach assists in project management, data analysis, and coping with stress by creating a plan of how students will the research.

Recommendations to the MPA Program at Texas State University

While students self-reported high knowledge in graduate student training areas, there are possible gaps in training concerning data management plans and co-authorship in the MPA program that should be addressed. While students recognize how to properly write a project management plan and how to manage data through good record keeping, it is important that they understand how to properly write a data management plan. A data management plan addresses how the data will be maintained and managed during and after the research project in order to share research results. Additionally, as discussed in chapter two, data management plans are a required component of all National Science Foundation proposal submissions. A data management plan reduces the likelihood of possible corruption of the data, because the researcher knows in advance how data will be kept and maintained. Data management plans could easily be integrated into the Notebook Method.

In addition to data management plans, the MPA program should add the component of co-authorship and publication practices to assist students with properly assigning co-authorship in future publications. As students from the MPA program further research careers, they must understand the importance of authorship, according to the International Committee of Medical Journal Editors (ICMJE) criterion.

Furthermore, while students feel adequately prepared to conduct statistical analysis, not all students are required to take advanced statistics in order to complete the

MPA degree (see *Appendix C* for a course catalog). Advanced statistics should be mandatory for all students in the MPA program to strengthen statistical analysis skills. With this increased knowledge, students are less likely to commit any violations against key assumptions and; therefore, to conduct analysis appropriate to the research methodology.

Although students reported they felt adequately prepared to manage employees, human resource courses are not a program requirement (see *Appendix C* for a course catalog). In order to teach graduate students how to manage employees, a human relations course should be made mandatory.

Future Research

The purpose of this research is to describe graduate student training in the MPA program, specifically in the areas of data integrity, responsible authorship and publication practices, and compliance. Clearly, this research project is limited to the graduate student training of students enrolled in or graduated from the MPA program at Texas State University, and cannot generalize about populations outside of the Texas State MPA program. To create broader generalizations about different populations, further research is needed.

Additional research should be conducted to determine if and how the Notebook Method and the use of conceptual framework make a significant difference in self-reported preparedness by MPA students. Further research also is necessary to compare student preparedness across MPA programs. Comparing students' reports on preparedness from different MPA programs could help determine the impact of the Notebook Method and use of a conceptual framework.

Moreover, future research should incorporate a more rigorous research methodology. The findings suggest a practical ideal type curriculum for graduate student training regarding responsible conduct of research components. Other descriptive research should incorporate a more rigorous survey methodology. The survey used in this study had several flaws, including not collecting demographic information and poor question wording. Additionally, open responses could have added to gain a broader understanding of student experiences.

Chapter Summary

The purpose of this chapter is to summarize of the research project's findings which demonstrated students of the MPA program self-reported they felt sufficiently trained for possible careers in research. Additionally, the research recommends the MPA program integrate writing data management plans and assigning co-authorship into the curriculum. Lastly, the research suggests areas for future research in order to make better generalizations of graduate student training, not only at Texas State but within the State of Texas and the United States.

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APPENDIX A – SURVEY QUESTIONS

Consent Form

Researcher: Courtney Swaney
Email: cf1220@txstate.edu

This study involves research for a Texas State MPA Applied Research Project. The purpose of this study is to describe aspects of graduate student training. As an MPA student, you have been chosen to describe your experiences in the MPA program.

This study will involve an approximately 15 minute survey. The researcher will ask questions regarding graduate student training in three key areas: Data Integrity, Responsible Authorship and Publication Practices, and Compliance.

Survey questions will be asked in a format similar to the question below:

"My graduate training adequately prepared me in how to properly cite scholarly literature?
Strongly agree/ agree/ neutral/ disagree/ strongly disagree"

This study may not directly benefit the participant but could benefit the overall MPA program by identifying areas of strength and weakness of the MPA graduate student training.

There is no compensation offered to participants.

Participation is voluntary, and refusal to participate will involve no penalty or loss of benefits to which the subjects otherwise entitled, and the subject may discontinue participation at any time. The participant has the right to refuse to answer any question at any time, for any reason, and participants may withdraw from the study at any time without prejudice or jeopardy to their standing with the University and any other relevant organization/entity with which the participant is associated.

Pertinent questions about the research, research participants' rights, and/or research-related injuries to participants should be directed to the IRB chair, Dr. Jon Lasser (512-245-3413 - lasser@txstate.edu), or to Ms. Becky Northcut, Compliance Specialist (512-245-2102).

The confidentiality of the individuals will be maintained as a result of the project. A summary of the findings will be provided to participants upon completion of the study, if requested. Participants may access the results by contacting the researcher listed above.

By clicking 'Next' you are consenting to participate in this study. Please print a copy of this form for your records.

IRB Approval #EXP2011B1585

1. Please select the number of credit hours you have completed in the Masters of Public Administration (MPA) program:

- ☐ 0-12
- ☐ 15-30
- ☐ 30-39
- ☐ Graduated

Data Integrity

Has your training (either in coursework, training, or special classes) prepared you to:

2. Understand the scientific method?

- ☐ Yes
- ☐ No

3. Write a data management plan?

- ☐ Yes
- ☐ No

4. Write a project management plan?

- ☐ Yes
- ☐ No

5. Effectively manage your time?

- ☐ Yes
- ☐ No

Has your training (either in coursework, training, or special classes) prepared you to:

6. Cope with stress associated with research work?

- ☐ Yes
- ☐ No

7. Properly maintain research data and records after data collection?

- ☐ Yes
- ☐ No

8. Properly manage data?

- ☐ Yes
- ☐ No

9. Conduct advanced statistical analysis and not commit any violations of key assumptions associated with various statistical methods?

- ☐ Yes
- ☐ No

Data Integrity (continued)

10. Peer networking has enhanced my coping with research challenges.

- ☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

11. My graduate training adequately prepared me in proper data management.

- ☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

12. My graduate training adequately prepared me in proper data analysis.

- ☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

13. My graduate training adequately prepared me in how to cope with the stress of conducting research.

- ☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

Data Integrity (continued)

14. My graduate training adequately prepared me in writing a data management plan.

☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

15. My graduate training adequately prepared me in how to keep appropriate records during and after data collection.

☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

16. My graduate training adequately prepared me in knowing why it is important to share data with other researchers.

☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

Responsible Authorship and Publication Practices

Has your training (either in coursework, training, or special classes) prepared you to:

17. Properly cite scholarly literature?

- ☐ Yes
- ☐ No

Has your training (either in coursework, training, or special classes) prepared you to:

18. Assign authorship to publications?

- ☐ Yes
- ☐ No

Responsible Authorship and Publication Practices (continued)

19. My graduate training adequately prepared me in how to cite scholarly literature.

☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

20. My graduate training adequately prepared me in how to properly assign authorship to co-authors.

☐ Strongly agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly disagree

Compliance

Has your training (either in coursework, training, or special classes) prepared you to:

21. Define what a conflict of interest is?

- ☐ Yes
- ☐ No

22. How to identify a conflict of interest?

- ☐ Yes
- ☐ No

23. Resolve a conflict of interest by using campus resources available to help you?

- ☐ Yes
- ☐ No

Compliance (continued)

24. Did you learn about conflict of interest through case-studies?

☐ Yes

☐ No

25. Did you learn about conflict of interest through role-playing?

☐ Yes

☐ No

Has your training (either in coursework, training, or special classes) prepared you to:

26. Manage employees?

☐ Yes

☐ No

27. Fair hiring techniques?

☐ Yes

☐ No

28. Firing practices?

☐ Yes

☐ No

29. My graduate training adequately prepared me in how to identify a conflict of interest.

☐ Strongly agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly disagree

30. My graduate training adequately prepared me in how to manage employees.

☐ Strongly agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly disagree

Survey Questions	N	% Yes Responses
Has your training (either in coursework, training, or special classes) prepared you to:		
Properly cite scholarly literature?	78	92%
Assign authorship to publications?	78	64%
Survey Questions	N	% Responses Strongly Agree or Agree
My graduate training adequately prepared me in how to cite scholarly literature.	77	90%
My graduate training adequately prepared me in how to properly assign authorship to co-authors.	77	51%

Survey Questions	N	% Yes Responses
Has your training (either in coursework, training, or special classes) prepared you to:		
Define what a conflict of interest is?	77	82%
How to identify a conflict of interest?	76	83%
Did you learn about conflicts of interests through case-studies?	76	62%
Did you learn about conflicts of interests through role-playing?	76	37%
Has your training (either in coursework, training, or special classes) prepared you to:		
Manage employees?	77	73%
Fair hiring practices?	76	74%
Firing practices?	76	63%
Survey Questions	N	% Responses Strongly Agree or Agree
My graduate training adequately prepared me in how to identify a conflict of interest.	77	71%
My graduate training adequately prepared me in how to manage employees.	77	61%

APPENDIX C – MASTERS IN PUBLIC ADMINISTRATION COURSE CATALOG

Core Courses- 30 Credit Hours

- POSI 5311 Public Finance Administration
- POSI 5314 Organizational Theory
- POSI 5315 Problems in Public Personnel Administration
- POSI 5318 Public Management and Ethics
- POSI 5321 Introduction to Public Policy and Administration
- POSI 5330 Problems in Public Law
- POSI 5334 Problems in Quantitative Analysis
- POSI 5335 Problems in Research Methodology
- POSI 5397 Applied Research Project

One course from the following:

- POSI 5340 Problems in American Public Policy
- POSI 5341 Seminar in the Policy Process
- POSI 5343 Seminar in Program Evaluation

It is advised that POSI 5334 be taken after POSI 5303 but prior to POSI 5343 and POSI 5335. POSI 5321 should be taken within the first 6 hours.

Career Support Areas

In addition to the core courses students will select one of the following 9 career support areas and complete nine hours of coursework from courses listed in the **specific** career support area.

Administration of Criminal Justice Systems (ACJS)

Select three courses from the Criminal Justice Curriculum or:

- POSI 5343 Seminar in Program Evaluation

General Public Administration (GPA)

Effective 9/9/2010: Select three graduate level political science electives.

Government Information Systems (GIS)

Select nine hours from the following courses:

- POSI 5345 Conceptual Foundations of Government Information Systems

- POSI 5346 Technology of Government Information Systems
- POSI 5347 Public Finance Information System

Human Resources in Public Administration (HRPA)

Select nine hours from the following courses:

- POSI 5316 Labor Management Relations
- POSI 5317 Management Practices in Public Personnel Administration
- SOCI 5319 Seminar in Social Psychology
- POSI 5345 Conceptual Foundation of Government Information Systems
- POSI 5343 Seminar in Program Evaluation

International Relations (IR)

Select nine hours from the following courses:

- POSI 5301 Problems in American Foreign Relations
- POSI 5360 Problems in International Politics
- SOCI 5364 Problems in International Organizations
- POSI 5365 Problems in International Law
- POSI 5375 International Comparative Public Administration
- POSI 5380 Problems in International Political Economy
- POSI 5384 Topics in Modern Democratic Systems
- POSI 5385 Topics in Third World Politics

Public Finance Administration (PFA)

Select nine hours from the following courses:

- POSI 5312 Public Sector Economics
- POSI 5343 Seminar in Program Evaluation
- POSI 5347 Public Finance Information Systems

Legal and Judicial Administration

Select nine hours from the following courses:

- POSI 5319 Seminar in Law and Constitutional Theory

- POSI 5343 Seminar in Program Evaluation
- POSI 5379 Legal Drafting
- POSI 5387 Legal Research
- POSI 5390 Administrative Law
- POSI 5394 Litigation

Social Policy

Select nine hours from the following courses:

- SOCI 5316 Seminar in Deviation and Social Problems
- SOCI 5320 Seminar in Demography
- SOCI 5343 Seminar in Criminology
- SOCI 5353 Seminar in the Community
- SOCI 5363 Seminar in Medical Sociology
- SOCI 5370 Seminar in Multi-Cultural Relations
- POSI 5343 Seminar in Program Evaluation
- COM 5319 Organizational Communication

Urban and Environmental Planning

Select nine hours from the following courses:

- POSI 5333 Ecology and the Politics of Scarcity
- GEO 5312 Managing Urbanization
- GEO 5313 Environmental Management
- GEO 5314 Geographic Elements of Environmental Law
- GEO 5336 Transportation Systems
- GEO 5339 Land Development and Management
- GEO 5351 Regional Waste Management
- GEO 5408 Web Mapping * (**Prerequisite**)
- POSI 5343 Seminar in Program Evaluation
- POSI 7330 Environmental Policy, Politics, and Law*

*Requires instructor approval prior to registration

APPENDIX D – INSTITUTIONAL REVIEW BOARD EXEMPTION



Institutional Review Board

Request For Exemption

Certificate of Approval

Applicant: Courtney Swaney

Request Number : EXP2011B1585

Date of Approval: 09/29/11

A handwritten signature in black ink, appearing to read "M. Blanks".

Assistant Vice President for Research
and Federal Relations

A handwritten signature in black ink, appearing to read "Jon Lane".

Chair, Institutional Review Board

APPENDIX E – CONSENT FORM

Consent Form

Researcher: Courtney Swaney

Phone: (512) 947-7026, Email: cf1220@txstate.edu

This study involves *research* for a Texas State MPA Applied Research Project. The purpose of this study is to describe aspects of graduate student training. As an MPA student, you have been chosen to describe your experiences in the MPA program.

This study will involve an approximately 15 minute survey. The researcher will ask questions regarding graduate student training in three key areas: Data Integrity, Responsible Authorship and Publication Practices, and Compliance.

Survey questions will be asked in a format similar to the question below.

Within your graduate program experience, have you learned how to write a data management plan?

This study could be beneficial to participants by identifying areas of strength and weaknesses in the MPA graduate student training.

There is no compensation offered to participants.

Participation is voluntary, and refusal to participate will involve no penalty or loss of benefits to which the subjects are otherwise entitled, and the subject may discontinue participation at any time. The participant has the right to refuse to answer any question at any time, for any reason, and participants may withdraw from the study at any time without prejudice or jeopardy to their standing with the University and any other relevant organization/entity with which the participant is associated.

Pertinent questions about the research, research participants' rights, and/or research-related injuries to participants should be directed to the IRB chair, Dr. Jon Lasser (512-245-3413 - lasser@txstate.edu), or to Ms. Becky Northcut, Compliance Specialist (512-245-2102).

The confidentiality of the individuals will be maintained as a result of the project. A summary of the findings will be provided to participants upon completion of the study, if requested. Participants may access the results by contacting the researcher listed above.

By clicking 'Next' you are consenting to participate in this study. Please print a copy of this form for your records.

IRB Approval #: EXP2011B1585