ABSTRACT

Title of dissertation: A COMPARISON OF THE EXPERTISE OF
                           UNIVERSITY FACULTY AND STUDENTS IN
                           AMERICAN POLITICAL SCIENCE: IMPLICATIONS
                           FOR FUTURE RESEARCH ON HIGH SCHOOL CIVICS
                           AND GOVERNMENT

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     This study investigated the disciplinary knowledge and nature of expertise among

political science experts studying American political science. A comparison group of

students who had completed an introductory undergraduate course in American political

science also participated in the study. Numerous research studies have found that civics

and government courses often focus on the transmission of information from textbooks

and teachers to students. The result of this type of teaching, at least according to the

measures we currently utilize, has been the failure of the majority of students to learn

about American government, become invested in our system of government, and indicate

their desire to participate in the future. Civic and educational leaders have called for the

development of curriculum to promote critical thinking and improve student learning and

participation. Yet, there is no research base for understanding what critical thinking looks

like in civics and government and its related discipline of political science or what

activities and methods will lead to increased student achievement. With history education

as a model, where defining the discipline has led to a better understanding of critical

thinking in history and a more robust approach to teaching, the author investigated what

expertise in this subfield of political science looks like, how experts conceptualize the discipline, and what cognitive processes they use in their work using a concept sorting and mapping task, two problem-solving tasks, and an open-ended interview. Experts defined political science as an empirical discipline focused on phenomena related to government, power, and the allocation of resources. Experts also recognized relationships and connections between concepts in the discipline and used a variety of conceptual knowledge and strategic processing when engaging in their work, including recognition of context, the identification of sub-problems and constraints, and an acknowledgement of what they did not know. A comparison to the students allowed for the description of different levels of expertise. Implications of the study include the need for additional research on the strategic processing of political science experts and the potential to define educational outcomes for teaching and learning in civics and government classes.

A COMPARISON OF THE EXPERTISE OF UNIVERSITY FACULTY AND
STUDENTS IN AMERICAN POLITICAL SCIENCE: IMPLICATIONS FOR FUTURE
RESEARCH ON HIGH SCHOOL CIVICS AND GOVERNMENT

by

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This lack of specificity may be surprising given the history of civics and government in public schools. For nearly the entire existence of the publicly-funded system of education in the United States, students have been exposed to civics, civic training, and the study of American democracy. In some form or another, American students learn about the government and politics in schools, and a large majority of high school graduates have taken at least one semester of government coursework (Levine & Lopez, 2004). All 50 states and the District of Columbia require civics and government topics in the social studies curriculum (Lopez & Kirby, 2007), although they may be part of a history course or a semester-long class in government rather than a year-long course dedicated to government (Lopez & Kirby, 2007). This inclusion of government topics in the curriculum is in part due to the desire to train students to become good citizens once they leave the classroom, but also to develop critical thinking skills (American Political Science Association (APSA), 1994; Kahne & Middaugh, 2010; Niemi & Niemi, 2007; Niemi & Smith, 2001).

Despite this long history of including civics and government in our public schools, we know very little about how students learn in civics and government. We also know even less about what the goal of critical thinking means or looks like in these subjects and how to measure students' achievement of that goal. While research studies exist on students' participation in the government and their future plans for participation, as well as their civic knowledge and civic engagement, these studies do not focus solely on student learning in government classes (Comber, 2005; Gimpel, Lay, & Schuknecht, 2003; Hahn, 2010; Kahne & Westheimer, 2003; Rubin, 2007; Torney-Purta, Barber, & Richardson, 2005). Rather, they include any course with civic material, such as American

history (Niemi & Niemi, 2007). Researchers have conducted little or no empirical research into the links between the discipline most closely related to the school subject of government, political science, and the school subject itself.

The information we do have from these studies shows that there are different ideas about what students should learn and do in government classes, and these differences exist even in classrooms in which the teachers use local, state, and national standards in civics and government (e.g., the National Standards for Civics and Government released by the Center for Civic Education in 1996) to guide their instruction. Many students experience civics and government classes that are focused on the mastery of information, not critical thinking. These classes are often conducted using teacher-centered methods and emphasize the transmission of information about the institutions and functions of government (Gimpel, Lay, & Schuknecht, 2003; Hahn, 2010; Kahne, Rodriguez, Smith, & Thiede, 2000; Lopez & Kirby, 2007; Niemi & Niemi, 2007; Westhiemer & Kahne, 2004). There are some cases in which students experience government classes focused on the roles, responsibilities, and actions of the government and its people. These classes may be taught through student-centered, interactive activities, such as designing and completing community service projects, participating in simulations and role playing activities, or debating current events and government policies. However, these types of classes appear to be the exception, rather than the rule.

In addition, despite the instruction that students do receive in civics and government, they continue to do poorly on national assessments of their knowledge and engagement (National Assessment of Educational Progress (NAEP), 2010). Some assessments, such as the NAEP civics exam and the Vanishing Voter Project,

demonstrate that many students are unmotivated to participate in and lack knowledge about the government, its functions, and the major individuals involved in the government (Rubin, 2007). Other assessments, however, show that at least some American students have knowledge about government topics that is comparable to their peers in other nations (Torney-Purta, 2002).

These realities beg the questions of why differences exist in classrooms that use similar standards, why students continue to do poorly on national assessments, and how educators may improve students' knowledge of and engagement in civics and government, while also utilizing the best methods for teaching the content. These realities also lead to the question of what the best methods are for achieving the goal of well-informed, participatory citizens. One answer, which comes from work previously done in history, is to look to the discipline for a deeper understanding of the work of political scientists, particularly those who focus on American government and work in universities conducting research. Examining the discipline in such a way could lead to a better understanding of how these experts conceptualize the discipline, what ways of thinking are embedded in their study of American political science, and how we could use experts' ways of thinking to shift the government curriculum to better reflect the discipline.

This research could open a path to studying student learning in political science, identifying more and less advanced understandings of civics and government content, and teaching approaches that foster disciplinary learning. Having a deeper understanding of political science may also allow educational researchers, teacher educators, and teachers to connect school government courses to their referent discipline for the purpose of improving student learning. However, the goal is not to create political scientists in

elementary, middle, and high school. Rather, students can learn valuable ways of thinking if they study civics and government in ways similar to experts in the discipline. Thus, there remains a significant amount of knowledge to be gained through the study of the work of American political scientists and their conceptions of the discipline.

In history, for example, Lee (1978; 1984; 2005) analyzed the works of historians and philosophers of history and conducted research with children over the course of many years. Through this work, he defined two types of historical knowledge: substantive or first-order knowledge and procedural or second-order knowledge. In history, substantive knowledge refers to the content, the "facts" and major concepts, such as war and revolution, which many people might associate with a traditional history course. This type of knowledge results from the work of historians, although they and their work are often not visible when studying this information. On the other hand, procedural knowledge includes the concepts that structure the discipline and give events from the past coherence today. This type of knowledge occurs in the act of doing history and is not information to be learned or memorized. Instead, it includes the skills that allow historians to create a narrative about the past, and others have referred to the same skills when using terms like heuristics, critical thinking skills, and problem-solving strategies. According to Lee, procedural knowledge includes historical significance, which refers to the idea that a historical question or past event is important and meaningful enough to study, and continuity and change, which refer to the idea that some aspects of society and culture remain the same from age to age while other aspects change. Other disciplinary knowledge includes evidence, the ability to question material artifacts that provide a window into the past and are used to support a theory about what

happened in the past, and historical empathy, the ability to place historical events in context and understand how the worldviews of predecessors differ from our own. Thus, as historians read, analyze, and evaluate historical documents, they also use these concepts and skills to interpret the documents and the evidence presented there to construct an explanation of events. These explanations, or parts of them, may then become substantive knowledge for school children and others to learn.

Building upon Lee's work, Wineburg (1991) studied the nature of disciplinary expertise in the context of investigating historical questions. He compared experts and novices in history in how they read and used primary and secondary documents in order to answer a historical question. He found important differences between how experts understood and went about the task and how novices did so. Wineburg identified three heuristics that characterized historians' thinking about evidence as they considered a historical question. This work led to additional research into the nature of expertise in history, student learning in history, and how knowledge is presented in history classrooms. Likewise, this work has framed learning in history around particular ways of thinking, not just the memorization of information. No similar study has been completed in political science, giving social studies educators little guidance in developing an approach to government that is grounded in the discipline. A study like Wineburg's (1991) in political science could clarify goals for learning and expand our understanding of learning in this particular discipline and lead to school-based approaches to government that might improve student learning.

The work done by Lee (1978; 1984; 2005), Wineburg (1991), and others set the stage for a revolution in history education. However, no educational researchers have

conducted similar research in political science, leaving educators without an understanding of the disciplinary knowledge employed by experts in the field. This situation makes it more difficult to know what students need to learn about civics and government, what they should be able to do with that knowledge, and how they can demonstrate what they have learned. Without knowing what disciplinary knowledge experts use and how they use it, the subject can only focus on agreed-upon substantive knowledge, which can lead to memorization of that knowledge with little critical thinking required, or general suggestions about instruction rather than specific teaching strategies or pedagogies. As was the case in history, a better understanding of what experts in the discipline do and how they conceive of the discipline can give researchers, teachers, and students a clearer understanding of what teaching and student learning and achievement could look like in government. Such knowledge could also help clarify how government courses could not only reflect American political science, but also further the aims of civic education.

To address this gap in the research, I studied the nature of expertise among university faculty in political science who specialize in American government in order to determine what disciplinary knowledge they use when studying political science. Specifically, I attempted to determine what expertise in this subfield of political science looks like, how experts conceptualize the discipline, and what cognitive processes they use in their work. In order to do so, I investigated several questions, which included:

1) Is it possible to describe the dimensions of expertise in political science in the subfield of American government and if so what are the dimensions?

2) Can problem-solving tasks that represent expert work in this area elicit experts' disciplinary knowledge parallel to what has been done in history education research?

3) What disciplinary knowledge do American political science experts use when engaged in such problem-solving tasks?

4) What disciplinary beliefs do American political scientists have about the discipline?

Experts engaged in tasks that I hoped would allow them to demonstrate their conception of the discipline and share their thinking about a problem and its solution. Tasks included a concept sorting and mapping task, problem-solving tasks, and an interview with experts. Researching these questions could help social studies educators understand the nature of expertise in political science and perhaps even minimize the gap between a disciplinary approach to the subject matter and conventional schooling. Furthermore, investigating these questions could provide a framework for researchers to study teaching and learning in government in a way that goes beyond memorization of details. Thus, there is the potential for this line of research to define educational outcomes for civics and American government courses that are specific enough to be measured and assessed, in addition to defining outcomes that are grounded in the referent discipline of American political science.

In addition to the experts, a small comparison group of less-expert participants, which consisted of four students currently taking an introductory college course in American government. Although it would have been interesting to work with high school teachers as the comparison group, such a group would not be ideal. High school teachers

have several different types of expertise in varying degrees, and while they may have some expertise in American government and political science, much of that knowledge comes from social studies standards, curriculum, and assessments. This type of expertise does not derive from the study of political science. Teachers' knowledge of curriculum, pedagogy, and school approaches to government classes blend with their knowledge of political science, which makes the comparison to political scientists difficult. Students in an introductory American government class will not be influenced in their understanding of political science by curriculum, standards, and pedagogy in the same way that teachers will be.

My main focus in the study was to identify expertise among political scientists who teach and research American government in universities. The purpose of the comparison group was to make the distinction clearer between the knowledge and processes of experts and those of individuals with less expertise. Specifically, the comparison group allowed me to make claims about which types of knowledge and processing that participants exhibited relate to their expertise and which are more general forms of knowledge and mental processes. I then compared the cognitive processes and disciplinary knowledge of the experts to those of individuals with less expertise. Such a comparison provided information necessary to begin to define different levels of expertise with more precision.

The chapters that follow include the literary basis for my research study, the methods I used to study the expertise of political scientists and students, the findings from the data collection, and conclusions drawn from the data. In chapter two, I begin by exploring the purpose(s) of social studies education, followed by a look at the research on

what occurs in civics and government classes now. I also include literature on disciplinary learning, its purposes and benefits to learning, as well as history education research and the results of including disciplinary learning in history classrooms. Chapter two also includes a discussion of political science and research on expertise and concludes with the conceptual framework for my study. Chapter three describes the participants of the study, which included ten experts and four students, as well as the methods I used for collecting and analyzing data. The collection methods were developed based on a pilot study conducted with graduate students in political science, which I also discuss in chapter three. Chapters four and five include reports of experts' and students' disciplinary knowledge, respectively. In each chapter, I describe my data collection – the interview, concept sorting and mapping task, and problem-solving tasks – and the participants' responses for each. The result is a discussion of the participants' disciplinary beliefs, organization of knowledge, and disciplinary knowledge used while solving problems. Then, in chapter six, I compare the disciplinary knowledge of the experts and the students and describe the different levels of expertise in American political science evidenced by these two groups. Finally, chapter seven includes the conclusions I, as well as implications for teaching and learning and future research on disciplinary learning in American political science.

Table 1 below briefly defines several of the key terms that will be used throughout this report.

Table 1

Key Terms Used in this Proposal

Key Term	Definition
Civics	A course or unit of study in school in which students study their roles and responsibilities as citizens.
Conceptual Knowledge	The way in which an individual understands and represents concepts. It includes substantive knowledge and the organization of knowledge.
Disciplinary Beliefs	An individual's beliefs about knowledge – what it is and how it is developed – within a particular discipline.
Discipline	A particular mode of thinking and interpreting the world, which includes concepts, theories, and facts, as well as the processes from which these concepts, facts, and other knowledge are built (Gardner & Dyson, 1994).
Expert	An individual who performs well in a given domain (Krosnick, 1990) or who has a reputation as an expert due to academic degrees or certifications (Voss & Wiley, 2006). For the purposes of the proposed study, an expert will be identified by their academic degrees, specifically a Ph.D. in political science.
Expertise	The possession of a large body of both conceptual and procedural knowledge related to a specific discipline (Chi, Glaser, & Rees, 1982).
Government	A course in school in which students study the structures and functions of the U. S. government. In some cases they may also compare governments from different countries.
Political science	The academic discipline that is most closely related to civics and government courses in K-12 schools. A deliberative process of inquiry and investigation into political power, who has it, and how it is used in the U.S. Political scientists may study behavior, groups, individuals, organizations, and institutions that are part of the U. S. government and how they compete for and use political power.
Substantive Knowledge	The content of a discipline. The major facts and concepts in the discipline
Strategic Processing	The use of problem-solving strategies and other cognitive skills to solve a problem or understand a concept, including metacognitive self-regulation and procedural knowledge.

Chapter Two: Literature Review

In the chapter that follows, I detail the literature that lays the foundation for studying the nature of expertise in political science that is relevant for instruction in high school civics and government courses. I begin by establishing the purposes for studying social studies in schools, followed by an explanation of the benefits of disciplinary learning and our current understanding of civics and government classes. Then, using history as an example, I show how studying the nature of the discipline and the nature of disciplinary expertise have led to new curricula in history and the potential for improved student learning. I then turn to political science and explain my understanding of the discipline based on the available literature. Finally, I finish the chapter with the literature on expertise, which serves as the basis for my conceptual framework.

Purpose(s) of Social Studies

In many schools, the task of delivering much of the civic knowledge and government curriculum falls to social studies teachers, which is why having knowledge about social studies, its history, and its purpose is important for any discussion about government and political science. Today's social studies has its roots in the late 19th and early 20th centuries when various organizations like the National Education Association (NEA), the American Historical Association (AHA), and the American Political Science Association (APSA) set out to develop a program of study for all students (NEA, 1894; Niemi & Smith, 2001). For example, in 1894 the Committee of Ten, sponsored by the NEA, issued its conference report that included suggestions about how to create uniformity in school programs and requirements for college admissions. According to the Committee, the purpose of secondary school was to prepare all students for life beyond

school, and in order to do so, students needed to have four years of "rigorous mental training." The Committee included history, civil government, and political economy as one subject for students to study, while geography represented a separate, although related, subject.

Other committees and reports soon followed with their own recommendations for the study of history and the other social studies. In 1916, the NEA again commissioned a report on the Reorganization of Secondary Education (Niemi & Smith, 2001). The Report of the Committee on Social Studies included recommendations for the development of courses in civics, government, and the problems of democracy, as well as geography and history. The purpose of these courses was to "Americanize" the recent influx of immigrants and to socialize the mass of school-aged children who were no longer permitted to work due to recent child labor laws (Niemi & Smith, 2001). That same year, the APSA issued its own report declaring a commitment to support schools in their "education for citizenship and public service" (Niemi & Smith, 2001).

Two years later, the NEA sponsored another conference to develop the Cardinal Principles of Secondary Education (NEA, 1918). In the subsequent report, the committee restated the purpose of public education as to develop within students the knowledge, interests, ideals, habits, and powers needed to help society reach its goals and the ability to apply that knowledge to the activities of life. The goal of social studies was civic education and the development of qualities that would allow students to act as responsible members of a community. These qualities included the comprehension of the ideals of American democracy, a sense of loyalty to those ideals and the nation, knowledge of the social agencies and institutions of the government, and good judgment

about the means to promote the common good. In order to develop these qualities, the committee recommended students learn more than content and information and participate in projects and problems that required cooperative learning and collective solutions (NEA, 1918). The National Council for the Social Studies (NCSS), created in 1921, reiterated this theme of citizenship education and the goal of meeting the needs of society through education.

During the ensuing years, other committees and conferences weighed in on the topic of the role of schooling, specifically the role of social studies. An AHA commission report indicated the purpose of social studies was to study the content of the subjects and develop disciplinary thinking skills. In 1959, the Woods Hole Conference, using new information from developments in cognitive psychology, promoted learning through inquiry and discovery (Bruner, 1960). The New Social Studies movement that followed also emphasized inquiry and critical thinking, and the curriculum developed out of this movement focused on the structures of the disciplines and major themes, rather than on chronology (Berelson & Steiner, 1966). As a result of these and other initiatives, civics and government courses began to emerge in schools throughout the country. In many schools, students took a civics course in eighth or ninth grade and a government course in twelfth grade. This twelfth grade course often followed courses in history and served as a capstone to introduce students to the adult rights and responsibilities they would obtain following graduation. However, local control and decentralized decision making about the curriculum resulted in a lack of cohesion as to the goals, instructional methods, and topics of these civics and government courses. From mid-century through the early 1980s, the number of courses in civics and government slowly decreased while the

number of social science elective classes, such as economics, psychology, ethnic studies, and sociology, increased. The 1983 *Nation at Risk* report halted this trend by tightening graduation requirements and advocating that schools return to the basics of education. Enrollment in government classes quickly increased, and topics from civics courses were integrated into these government classes (Niemi & Smith, 2001).

What followed were the standards movement of the 1990s and the accountability movement of the first decade of the 21st century, both of which resulted in federal policies that attempted to raise academic standards through standardized curricula and assessments. Yet, local control and decentralized decision making continue to ensure that the topics, instructional methods, and goals of government courses remain varied across jurisdictions. As a result, it is difficult to determine what students should learn in government courses, when they should take such courses, and how educators should teach them. Furthermore, the situation is complicated by the fact that government as it is taught in many schools is not a single academic discipline, but a compilation of several and includes many topics from civics and citizenship training. It also remains unclear which academic discipline(s) government courses should draw from, especially if they include civics topics. For example, American political science seems to be the discipline that government courses draw from most, but many political scientists find civics to be uncritical, low-level, and unaligned with what occurs in academia. Likewise, many government courses also include topics from economics and public policy studies, but civics topics are not necessarily included as part of these disciplines (Niemi & Smith, 2001). As a result, the experiences that students have in government courses can vary

from state to state, district to district, school to school, and even classroom to classroom (Gimpel, et al., 2003; Levstik, 2008; Lopez & Kirby, 2007; Kahne & Middaugh, 2010).

Today, there remains a diversity of opinion as to the purpose of social studies in public schools and how to achieve that purpose. For example, some argue that the role of social studies is to develop responsible citizens committed to the ideals of American democracy (Banks, 2006; Carnegie Corporation & CIRCLE, 2003), while other ideas have included the goal of understanding diversity and varying perspectives as part of responsible citizenship (Banks, 2006; Jones, Pang, & Rodriguez, 2001; Short, 1994). However, these advocates do not offer specific curricula or teaching methods for achieving these goals. Questions remain as to how one becomes a good citizen in these situations. Is it through knowing what institutions, people, and ideals make up our government? Is it by making students aware of varying perspectives and the diversity that exists in the United States and around the world? Some researchers believe that students also need to be able to think critically and that the curriculum needs to involve disciplinary ways of thinking in order for them to become truly educated citizens (Alexander, 2003).

The purpose for teaching social studies and the means to meet that goal can have consequences for how the curriculum is developed and taught. For example, among advocates of citizenship preparation, there is agreement that students should be given the knowledge and skills that will allow them to be competent citizens. Included in such conceptions is knowledge about the foundations of American democracy, the institutions of the government, and the roles and responsibilities of citizens (Banks, 2006; Jones, et al., 2001). However, in some cases, this goal is achieved through the study of those

institutions and their roles, while also studying the political leaders who make decisions within the confines of those institutions. In such a social studies curriculum, the heroes of American history, such as Washington, Jefferson, and Lincoln, play a prominent role, while the focus is often on the expansion of democracy and freedom (VanSledright, 2008).

In other cases, this goal is achieved through the development of cognitive, emotional, and social skills that teach students how to acquire knowledge and then use it to make informed decisions that will benefit society. In this view, students should be able to recognize and solve problems, analyze and clarify personal and community values, and make reflective decisions that will improve their communities, nations, and the world (Banks, 2006; Carnegie Corporation & CIRCLE, 2003; Jones, et al., 2001). These skills can be developed through an inquiry process that begins with facts, concepts, generalizations, and theories, and proceeds through the selection and judgment of multiple sources that provide additional information. All of this information is then synthesized and applied to complex social problems (Banks, 2006). For those who advocate that students focus on diversity and multiple perspectives, this method of inquiry can also be useful. Rather than entertain disagreements over whose cultural, political, and social history should be taught, those who support this purpose advocate for students to celebrate differences, read multiple sources and perspectives, and reflect on their community in light of the contributions of different peoples (Short, 1994).

While the main focus of social studies education, especially civics and government courses appears to be similar in the above cases - to develop good citizens who know about democracy and will participate in positive ways - the means for

achieving that goal are very different. Even before the turn of the 20th century, some educators and education-related organizations advocated for cooperative learning and active participation in the curriculum, the inclusion of disciplinary knowledge and inquiry in the curriculum, and the development of critical thinking skills. Over a hundred years later, many students still learn in content-driven, teacher- and textbook-focused classrooms with few, if any, opportunities to participate and learn in disciplinary ways. Others, however, learn in classrooms that are student-centered and provide opportunities for students to actively engage in the curriculum and develop critical thinking and other skills. This situation makes it difficult to develop a common conception of what government is, what students need to know and be able to do in the course, and how they can demonstrate what they have learned. Part of the problem, as will be discussed in more detail in the next section, is that several different standards documents exist to guide teachers in their planning and instruction. Although each of the authors of these various standards purport to have the same goal of developing good citizens, they go about it in very different ways, resulting in different classroom practices and student achievement outcomes.

Civics and Government

Many politicians, political organizations, educational organizations, educators, and other individuals and groups with an interest in what happens in schools appear to agree on the need for students to learn the fundamental features of the United States' government and what it means to be a responsible member of our American democracy. States attempt to ensure such learning takes place through the teaching and assessment of government and civics topics, which are often part of the social studies curriculum.

However, few states actually mandate a year-long course dedicated to civics and government, and even fewer have an assessment solely on civics and government (National Alliance for Civics Education, 2009).

Furthermore, students continue to demonstrate a weak understanding of the principles of the Constitution and how the government works on the NAEP test of civics and government. For example, in 1998, two-thirds of students in fourth, eight, and twelfth grades scored "basic," while just one-fifth scored "proficient" (Ross, 2000). By 2010, only students in fourth grade had made statistically significant progress, although it did not represent large gains. Over two-thirds of students in each grade level continued to score "basic" or "below basic" (NAEP, 2010). Different ideas exist as to why students do so poorly, including the idea that how teachers teach the content is inappropriate and the idea that students are not spending enough time learning about civics and the government.

Civics and government classes. In general, researchers have found that civics and government classes often focus on the transmission of information from the teacher and textbooks to students (Chambliss, Richardson, Torney-Purta, & Wilkenfeld, 2007; Hess, 2009; Kahne & Middaugh, 2010; Kahne, Rodriguez, Smith, & Thiede, 2000; Kirby, Levine, & Elrod, 2006; Levine & Lopez, 2004; Lopez & Kirby, 2007; Niemi & Niemi, 2007; Torney-Purta, 2002; Torney-Purta, et al., 2005; Westhiemer & Kahne, 2004). In these classes, teachers talk, and students listen and take notes. Students report learning about the Constitution, the institutions of the government and how they work, political parties, the process of making laws, and major governmental leaders and American heroes from the past (Kahne &Middaugh, 2010; Kirby, Levine, & Elrod, 2006;

Levine & Lopez, 2004; Lopez & Kirby, 2007). Furthermore, large majorities of students

report watching videos and memorizing material from textbooks, while very few report

reading material other than the textbook, having guest speakers, and role-playing or

engaging in simulations (Chambliss, et al., 2007; Lopez & Kirby, 2007). They also report

that the textbooks used in government classes are often poorly organized and

uninteresting, making it difficult for students to read (Chambliss, et al., 2007). Finally,

few students describe their classrooms as ones in which they discuss policy issues or

major challenges or problems facing the nation, such as racial prejudice or other forms of

injustice (Hess, 2009). As a result, when they have been asked how they feel about

government and politics, many students respond that it is boring and that they do not care

about it (Kahne & Westheimer, 2003; Torney-Purta, 2002; Torney-Purta, et al., 2005).

Several researchers (Gimpel, et al., 2003; Kahne & Middaugh, 2010; Kahne &

Westheimer, 2003; Rubin, 2007) believe that there can be serious consequences for

classes designed in this manner. Classrooms in which students are required to receive,

memorize, and repeat information but not produce any of their own can result in a

disconnect between students' life experiences and what is learned in school. For some

students, especially those who identify as racial, religious, or sexual minorities and those

who are socioeconomically disadvantaged, the reality of the American political and

economic system is often one of discrimination and injustice. Yet, in school, they learn

that the system is designed for equality and justice for every citizen. This lack of

congruency between their reality and the ideal can lead to empowered students who want

to take an active role to make the actual closer to the ideal. However, it is more likely that

it leads to discouraged students who remain passive and determine that they have little or

no efficacy to produce change (Gimpel, et al., 2003; Kahne & Middaugh, 2010; Rubin, 2007). Also, in those classrooms in which teachers offer their own opinions but limit students' expression of opinions, students' creativity, willingness to participate, and critical thinking may be stifled. The focus on the substance of government at the expense of the development of skills, therefore, can have detrimental effects for some students who might disengage from school and from participation in the future (Kahne & Westheimer, 2003).

However, the picture is not so bleak in all classrooms. In some classrooms, teachers use a variety of activities and texts to teach both the substance and the skills of the subject. These activities include community-based projects, service learning, small group tasks focused on researching current events or other topics, guest speakers who work within the government, role-playing, mock trials, and simulations of governmental processes and the proceedings of governmental bodies (Hahn, 2010; Lopez & Kirby, 2007). The texts used in these classrooms are often more sophisticated, better organized, and more interesting than the textbook, and students are often more inclined to engage in classroom activities and predict their future participation in the government and politics (Chambliss, et al., 2007). Also, teachers that use these methods often allow for more discussion and the development of reasoned positions on topics related to government and politics.

In this way, these teachers attempt to prevent the disconnect that some students might feel between reality and the ideal often taught in schools, while also possibly avoiding the disengagement from school and the political process by some students (Levine & Lopez, 2004). Activities such as discussion, reading texts other than the

textbook, simulations, research projects, and others have resulted in students who were more interested in government and politics, better at communicating orally and in writing, and more inclined to say they would participate in politics in the future (Hahn & Alviar-Martin, 2008; Torney-Purta, et al., 2005; Torney-Purta & Wilkenfeld, 2009). Furthermore, students who engage in these activities have greater knowledge about the government and politics and improve their critical thinking skills (Lopez & Kirby, 2007). However, the learning and teaching in them is haphazard and does not help us build a model for cultivating expertise in this subject area. Classrooms such as these are rare, and without a disciplinary basis for political science and research that connects the discipline and the classroom, our ability to draw conclusions about student learning in such classrooms is limited.

Additionally, many politicians and others continue to point to students' poor performance on national assessments and call for change. As a result of students' poor performance on these assessments, many politicians and educators have called for an increase in the time that schools allot for civics and government and for more emphasis on the form and functions of the government (Ross, 2000). However, it remains doubtful if simply spending more time teaching the branches of government, separation of powers, and other aspects of the form and functions of the government would help students better understand their role as responsible citizens in a democracy or become excited about and active in that democracy. Furthermore, in the current climate dominated by No Child Left Behind (NCLB), which emphasizes reading and mathematics, schools are less likely to allocate more time to social studies. It is also doubtful that these methods would improve students' capacity for analysis, synthesis, and evaluation, which are skills many social

studies educators claim to promote in their classrooms (Kahne, Rodriguez, Smith, & Thiede, 2000). In order to achieve these goals, there may need to be a radical change in the way educators conceptualize and teach civics and government. For many teachers, how they conceptualize and teach the subject is influenced by the standards documents at their disposal, which are many and often substantially different. In some cases, these documents also lack specificity in terms of what is meant by terms like critical thinking, active participation, and responsible citizens. Below is a brief discussion of some of the standards documents and how they may create a mixed and, in some cases, incomplete set of expectations for teachers.

The Civic Mission of Schools. In their 2003 report, the Carnegie Corporation of New York and CIRCLE: The Center for Information and Research on Civic Learning and Engagement offered a vision for the inclusion of civics and government in schools that would increase students' "informed engagement" (p. 4). The Civic Mission of Schools represents a consensus among experts from across the political spectrum and various fields, including political science, education, and psychology. In the report, these experts set forth four major goals for civic education, which included creating competent and responsible citizens who think critically and engage in dialogue with others who have different perspectives and who utilize their skills and knowledge while participating politically. They also promoted six approaches to civic education that they believed schools could use to achieve their goals. Three of these approaches directly relate to my study: provide instruction in government, history, law, and democracy; incorporate discussion of current local, national, and international issues and events into the classroom; and encourage students' participation in simulations of democratic processes

and procedures. In the report, the authors also warn against "teaching only rote facts about dry procedures" (p. 6) and encourage other activities that increase interest and improve critical thinking, communication, and other cognitive skills. Existing standards and assessments address these goals and approaches to varying degrees.

In 2011, a successor report, *Guardian of Democracy: The Civic Mission of Schools* (The Leonore Annenberg Institute for Civics & the Campaign for the Civic Mission of Schools) was released. The 2011 report contained similar goals and promising practices for civic education as the 2003 report, and extended that report by including a call for "twenty-first century competencies" (p. 6) and additional recommendations for policymakers, educators, parents, researchers, and others based on recent research.

However, the documents' authors do not specify what it means to "think critically" about civics and government and offer suggested activities that might lead to increased knowledge, interest, and participation on the part of students. The goal of my study is to determine what critical thinking in American political science involves and fill in some of the gaps in an effort to build the groundwork for additional study into what activities and learning will promote student learning, interest, and participation in civics and government.

NAEP & the National Standards for Civics and Government. The NAEP (2010) assessment in civics and government was designed to evaluate students' understanding of American democratic institutions and ideals, including students' knowledge about the government, their intellectual and participatory skills, and their civic dispositions. Students are expected to identify and describe civics, politics, government, the foundations of our political system, and the purposes, values, and

principles of American democracy. They are also expected to explain and analyze

information and evaluate and defend a position. The same expectations are included in

the National Standards for Civics and Government (1994) released by the Center for

Civic Education. In some ways, these expectations reflect the goals and approaches

outlined in *The Civic Mission of Schools* (Carnegie Corporation & CIRCLE 2003) and its

successor report *Guardian of Democracy: The Civic Mission of Schools* (The Leonore

Annenberg Institute for Civics & the Campaign for the Civic Mission of Schools, 2011),

in particular the goals of developing students who think critically and use their skills and

knowledge to participate in our democracy. However, to assess students in these content

areas, skills, and dispositions, the NAEP test uses a questionnaire and multiple-choice

questions. The questions lean heavily on the structure of the government and offer

students few opportunities to express themselves or their ideas about government and

politics (Niemi & Smith, 2001). Students do not have the opportunity to fully develop or

showcase their critical thinking or participate in the discussion of issues and events as is

suggested in *The Civic Mission of Schools* (Carnegie Corporation & CIRCLE, 2003) and

Guardian of Democracy: The Civic Mission of Schools (The Leonore Annenberg Institute

for Civics & the Campaign for the Civic Mission of Schools, 2011*). Again, however,

critical thinking in civics and government is never defined, leaving teachers without a

clear goal and researchers without a clear construct to study.

National Council for the Social Studies. The National Standards for Civics and

Government (1994) are not the only national standards that exist, however. The National

Council for the Social Studies (NCSS) has also created a set of standards that include

civics and government. According to NCSS (2002), schools need to emphasize academic

social studies content and performance-based assessments. The organization advocates for the teaching of social studies in ways that are more consistent with *The Civic Mission of Schools* report (Carnegie Corporation & CIRCLE, 2003) and *Guardian of Democracy: The Civic Mission of Schools* (The Leonore Annenberg Institute for Civics & the Campaign for the Civic Mission of Schools, 2011). NCSS advocates for curricula that integrates multiple subjects and ideas, allows students to actively engage with the material and each other, challenges students to think in new and more sophisticated ways, and has meaning for them in their lives both inside and outside of the classroom. Students are expected to analyze, synthesize, and evaluate to a far greater degree than in the NAEP (2010) assessment and National Standards (1994). At the same time, the pedagogical standards included in the NCSS document encourage teachers to develop critical thinking, problem solving, and performance skills in their students through active learning, inquiry, collaboration, and supportive classroom interactions. The standards also promote the use of a variety of assessments, including performance-based assessments and open-ended questions that allow students to express a position, use evidence to support it, and demonstrate their abilities to analyze, synthesize, and evaluate. Despite these positive goals, as with *The Civic Mission of Schools* (Carnegie Corporation & CIRCLE, 2003) and its successor report, NAEP (2010), and the National Standards (1994), NCSS fails to define critical thinking and the performance skills they seek to foster in students.

Maryland Voluntary State Curriculum & High School Assessment. Many states also have standards for civics and government, and a few even have assessments that include civics and government content. Until 2011, Maryland was one of the few

states that required students to complete and pass a standardized exam, the High School

Assessment (HSA) in government, in order to graduate (new legislation will require

seniors graduating in 2017 and beyond to once again pass an assessment in government).

To assist teachers in planning for the course, and previously for preparing students for the

assessment, the state publishes the Voluntary State Curriculum (VSC) (2006) in

government, which includes seven different units, such as the purposes, forms, and types

of political and economic systems; foundations and principles of government and the

Constitution; and participation in government. There are also four content standards that

help organize the material to be taught, which includes political science. This standard

includes the foundations of the government, political participation, and protecting rights

and maintaining order. Within each content standard there are also objectives for student

knowledge about the content. Most of the objectives begin with describe, explain, and

identify, while a few begin with analyze or evaluate. As with the NAEP assessment, the

VSC focuses on the structures of the government and offers few opportunities for

students to express their own opinions.

The HSA was also similar to the NAEP assessment and followed the VSC's units

and content standards. The entire test was composed of selected response questions,

which included factual information that students must recall, and short answer and essay

questions (these were removed in 2009). Throughout the assessment, students were asked

to recall and explain information rather than express opinions, take a position, or analyze

and evaluate a position or public policy. Both the VSC and HSA obviously encourage

instruction in government, but fail to meet other goals and approaches set forth in *The*

Civic Mission of Schools (Carnegie Corporation & CIRCLE, 2003) and *Guardian of*

Democracy: The Civic Mission of Schools (The Leonore Annenberg Institute for Civics & the Campaign for the Civic Mission of Schools, 2011), such as encouraging students to think critically, discuss issues and events of local, state, national, or international significance, and participate in simulations.

   Practical implications of these standards and assessments. For teachers and students, standards and assessments like NAEP, the VSC, and the HSA send the message that government classes should focus on the structures of the government and on determining the one correct answer rather than on what the APSA called the "realities" of political life, political behavior, and political processes (Niemi & Smith, 2001). According to these standards and assessments, being successful in civics and government means knowing information, but not necessarily doing anything with that information, such as participating in discussion and arguing well-reasoned positions based on evidence. There is not much in these standards and assessments to motivate teachers to have discussions, ask students to read and analyze documents, or ask for students' opinions and reactions. While the recall of factual information, description, explanation, and identification are important skills, they are not the only ones we should expect our students to master.

   As was noted earlier, the APSA has recommended that students learn the process of social science inquiry and the skills to participate effectively and democratically in society (Niemi & Smith, 2001). Although NCSS (2002), *The Civic Mission of Schools* (Carnegie Corporation & CIRCLE, 2003), and *Guardian of Democracy: The Civic Mission of Schools* (The Leonore Annenberg Institute for Civics & the Campaign for the Civic Mission of Schools, 2011) do not call for students to fully engage in the type of

research studies that political scientists do, they do encourage teachers to use methods that allow students to actively participate in their learning. They also call for teachers to make the curriculum meaningful to students' lives, which could mean discussing issues, writing position papers, and evaluating others' positions on various policy issues. NCSS (2002), *The Civic Mission of Schools* (Carnegie Corporation & CIRCLE, 2003), and *Guardian of Democracy: The Civic Mission of Schools* (The Leonore Annenberg Institute for Civics & the Campaign for the Civic Mission of Schools, 2011) encourage teachers to help students think critically, confront problems, and participate constructively in our government, and research supports that curricula based on standards like these can work. In both documents, skill development is as important as the content, since the two are connected. Recall of factual information, explanation, and identification are important, but not for their own sake. They are necessary as scaffolds toward deeper thinking and analysis, synthesis, and evaluation. Yet, even these documents fail to provide teachers with all of the guidance they need for teaching civics and government. The goal of developing responsible citizens who can think critically is far too broad to guide educators in terms of what students need to know and be able to do in government. More knowledge about what it means to think critically in these subjects is necessary, and understanding disciplinary knowledge in American political science could specify and ground what critical thinking in government classes looks like and means.

One missing piece that might shed some light on the best methods and pedagogies is a better understanding of what the discipline related to government courses is and what experts in the discipline know and how they go about their work. Currently, the subject lacks clear methods for achieving its goals and a means for assessing students' progress

toward those goals because we lack information about what disciplinary skills and knowledge experts use and how they use them. As was the case in history, a better understanding of what expertise in the discipline means can give researchers, teachers, and students a clearer understanding of what student learning and achievement should look like in government. My study can provide that missing piece by providing much-needed insight into the thinking of political scientists who study American government, and thereby suggesting some content and pedagogy for government courses, as well as disciplinary knowledge that might be used as part of a curriculum that can keep students interested in civics and government while also thinking critically. Future research can then build upon this work to determine what activities and pedagogies might achieve the goal of developing citizens who think critically and actively participate. The importance of disciplinary learning and a more detailed account of the result of the research done in history follows in order to highlight the benefits that might result from my study.

Disciplinary Learning

School subjects, such as mathematics, history, biology, physics, and government, all have referent disciplines that exist outside elementary, middle, and high schools. In some cases, these school subjects generally reflect the ways of thinking and knowledge structures of the disciplines, but for many students in American schools, the subjects, particularly in the social studies, resemble the disciplines in only minor or insignificant ways (Cuban, 1991; Kahne, Rodriguez, Smith, & Thiede, 2000; Niemi & Niemi, 2007; VanSledright, 2008; Westhiemer & Kahne, 2004). The field of political science is quite broad; therefore, I focus on American political science as a way of narrowing the field and connecting it more tightly to the content of government curriculum in schools.

Unlike subject matters, which are the collections of content matter that schools expect students to learn, disciplines are particular modes of thinking and interpreting the world. They include concepts, theories, and facts, what Lee (1978; 1984; 2005) called substantive knowledge, as well as the processes from which these concepts, facts, and other knowledge are built, what Lee called procedural knowledge (Gardner & Dyson, 1994). These processes include skills that are necessary for the development and distribution of truth in the discipline. For example, most disciplines have specific skills for inquiry that allow experts in the discipline to contribute new knowledge. There are also skills by which a novice can study the instances of a discipline and practice the discipline in order to gain expertise. Finally, there are specific skills related to the reading and interpretation of knowledge used and produced by the discipline (Schwab, 1978; Wineburg, 1991).

Disciplines also have structures that provide the foundation for scholarship in the discipline and distinguish it from others. These structures define and bound the discipline and determine what questions are asked, what phenomena are studied, and what assumptions are used when collecting and interpreting data. They also include what counts as evidence, different ways of interpreting the evidence, and methods used for justifying and verifying claims made by those practicing the discipline. However, structures can also be flexible in that practitioners with different preferences, abilities, and interests can adapt the structure to meet their needs and still produce knowledge in the discipline (Schwab, 1978).

Several educational researchers have advocated for a more disciplinary and domain-specific approach in schools, believing that this approach can improve student

learning (Alexander, 2003; Lajoie, 2003; Wineburg, 1991). These educational researchers and others do not expect that every student will or should become an expert in every discipline, but they do believe that students can and should make significant progress toward competence in school subjects, and one way to do so is to expose students to disciplinary ways of thinking. Learning in disciplinary ways can be motivating for students, and it can also increase their knowledge about both the substance of the discipline and the knowledge that practitioners possess. Knowing and understanding the nature of disciplines and their structures is important for students so that they can learn to think in sophisticated ways, but disciplinary approaches are often also more rigorous, engaging, and interesting (Parker, 2010). The more that students find the subject interesting, the more likely they are motivated to pay attention in class, learn the material, and then use what they have learned in their lives beyond school (Alexander, 2003; Parker, 2010). Thus, more interesting and engaging government classes may lead to more participation and civic engagement by young adults (Gimpel, et al., 2003).

Disciplinary approaches can allow students to understand how knowledge is organized in particular disciplines, to pursue topics and tasks that are more interesting to them, and to immerse themselves in meaningful learning experiences. Each of these aspects can in turn improve student learning, as research has shown that students learn better when they are interested in the subject, understand how pieces of information are related and connected to one another, and find the information valuable for their lives now and in the future (Alexander, 2003).

Lessons from History: Disciplinary Approaches in the History Classroom

Important lessons can be learned from history and the movement to include disciplinary skills in the history classroom. Researchers the United Kingdom, Canada, and the United States have studied the nature of history and expertise in history, which then led to an understanding of the content, knowledge structures and organization, and disciplinary knowledge that historians use in their work. Using this knowledge as benchmarks, other researchers were able to study history classrooms and student learning in history.

As was described above, Lee (1978; 1984; 2005) defined two distinct types of knowledge in history: substantive and procedural. Substantive knowledge is the content of history, the "facts" and major concepts, which result from the work of historians. Procedural knowledge includes the concepts that structure the discipline and give events from the past coherence today. This type of knowledge results from the act of doing history and involves the concepts and skills that allow historians to create a narrative about the past. It was only through his analysis of the works of historians and philosophers of history and his research with children over the course of many years that Lee was able to make the distinction between substantive and procedural knowledge.

Lee also worked with Dickinson and Shemilt to conduct several research studies into the nature of historical thinking, using both expert historians as well as students. For example, in one study Dickinson and Lee (1984) sought to discover how children behave when they are confronted with events from the past that seem strange or illogical. Dickinson and Lee asked children in small groups to read passages about either the Anglo-Saxon ordeal to prove that someone was or was not a witch or about Spartan

education. They then asked the children to discuss the passages and attempt to make sense of the actions of the Anglo-Saxons or the Spartans. In doing so, Dickinson and Lee were able to see children's initial reactions to the Anglo-Saxons' and Spartans' traditions, as well as what strategies the students used to make sense of the past, how they used evidence, if and how they used their own experiences, and the reasoning they used to come to conclusions. Dickinson and Lee concluded that children do not lack the ability to think historically. On the contrary, with assistance from teachers who understand their misconceptions and who present children with meaningful problems worthy of genuine thinking, students can and will think historically.

In his work, Shemilt (1983) evaluated the History 13-16 program in the United Kingdom, which was developed in 1972. The program focused on teaching history as a discipline demanding the use of critical thinking skills since, it was argued, students could only make sense of the past if they understood the methods and perspectives unique to the discipline. Shemilt analyzed the interviews of students, some of whom participated in the History 13-16 program and others who were taught history using a more traditional syllabus. The data from the interviews indicated that the children had different ideas about the discipline of history and made sense of the past in very different ways. Some students viewed history as lacking logic and without meaning outside of discrete events. Other students saw history as having a simple logic and following a necessary pattern, while still others understood that history is complex and involves numerous events and happenings, many of which are never studied. Finally, some students understood that historical events are time and context-bound. History 13-16 students were more likely to exhibit a sophisticated understanding of history, but few reached the most sophisticated

understanding. Still, Shemilt suggested that it is possible to "spiral" a history curriculum around concepts like causation, evidence, and change. Such a curriculum could promote critical thinking and more sophisticated understandings of history without turning students into little historians. This research was possible because earlier work identified features of expertise, which became an analytical framework for examining student thinking in history. Hopefully, one result of the present study will be the identification of disciplinary knowledge that could become the basis for a spiral curriculum in government.

The work of Lee, Dickinson, and Shemilt have led other researchers to look more closely at the work of historians and what cognitive processes they use when they utilize their knowledge. In the United States, Wineburg (1991) pioneered this work when he studied how individuals use and make sense of historical sources and documents and what underlying beliefs about history helped or hurt their ability to make sense of the information. In order to do so he had eight historians and eight high school students review a series of eight primary and secondary sources, as well as three pictures, describing the Battle of Lexington just prior to the American Revolution. Their main task was to use the documents to explain what had occurred during the battle and determine the reliability of the sources. The documents and pictures had some details in common but also had some differences, such that no two sources told the same story of the battle. Using a multi-part think-aloud Wineburg asked participants to describe their thoughts as they read and evaluated each of the documents and pictures, to determine which picture was the most accurate, to place the pictures in chronological order, and to rank the

documents according to their trustworthiness as sources for comprehending what occurred at Lexington.

Wineburg (1991) concluded that there were three heuristics, or aspects of disciplinary knowledge, that historians used when evaluating the documents: sourcing, corroboration, and contextualization. Sourcing occurred when an individual looked first at the author of a document and considered the author's perspective and motivation for creating the document. This heuristic was helpful for judging the trustworthiness of the document and for alerting the historian to biases that the author might have. Corroboration occurred when a participant evaluated one document in reference to others and noted any discrepancies or similarities. Again, this heuristic was helpful for determining the trustworthiness of a whole document or a few of the details within it. Finally, contextualization was the process by which a participant attempted to place the document within the context it was written. By understanding when, where, how, and for what purpose a document was created, the participants hoped to better understand the event and the document. Overall, Wineburg found that historians used these heuristics more often than the students did, regardless of their substantive knowledge.

Wineburg (1991) attributed the more frequent use of the heuristics by historians to three differences between the historians and the students. First, the two groups had different orientations to the task. Historians saw the task as complicated since we cannot know today, based on the evidence we have, what happened at the Battle of Lexington, although we can develop an educated guess. They placed evidence side-by-side, evaluated it, and offered their best explanations, often qualifying their explanations and noting the flawed nature of their interpretations. The students, on the other hand, saw

their task as a multiple-choice test with correct and incorrect answers. Each account offered an answer about what happened during the battle, and their role was to decide which one was correct. They often made their decision without interpretation or qualification. Second, the two groups had different conceptions of what a text is and how it is to be used. Historians saw the texts as social exchanges that must be understood within the context of the world in which they were written. However, the students saw texts as useful for conveying facts and information with little other important information within them. Finally, the two groups differed in their beliefs about historical evidence. Historians saw all evidence as subject to biases and perspectives, and they used the three heuristics to mitigate the effects of these biases as much as possible. The students also saw biases, but they did not see bias in all evidence. Instead, they found textbooks to be the least biased and most trustworthy.

This research revealed important aspects of what it means to be an expert and a novice in history. History experts use disciplinary knowledge when dealing with documentary evidence from the past, which helps them place documents in context, determine what information is reliable, and construct an account based in evidence. They must know information not just about the immediate topic they are studying, but also about other aspects of the context. They also have conceptualizations of what a text is, what evidence is, and how both should be used in their work. Experts in history know that they do not and cannot know exactly what happened in the past and that their interpretations are fallible. Finally, these experts do not necessarily work in a neat, linear way. Instead, they often read documents multiple times, returning to them even after they

have moved on to another one, start with the author rather than the text of a document, and evaluate and analyze documents side-by-side.

This and Lee's work gave researchers and teachers a set of defensible goals for student learning. Knowing this information helped other researchers determine how students could learn to think in similar ways and do similar things over time, if and how they could be taught these conceptualizations and skills, and what methods would be best for teaching them. It also helped to create a more complete picture of what history is and what historians do. Even though students may not view history in the same way as historians and often do not spontaneously use historical thinking skills, it does not mean that students are incapable of conceptualizing history in a disciplinary way and learning when and how to use knowledge (Barton & Levstik, 1996; Wineburg, 1991). In fact, it appears that, when explicitly taught to use disciplinary knowledge in history, students can and do use that knowledge (Britt & Aglinskas, 2002; Nokes, Dole, & Hacker, 2007; Tally & Goldenberg, 2005).

For example, Britt and Aglinskas (2002) studied whether students could be explicitly taught the historical thinking skills of sourcing, corroboration, and contextualization. They were also interested to determine if students would use the skills on their own after being taught how and when to use them. Thus, they developed a computer program, known as the Sourcer's Apprentice, to teach students how to think like a historian. The program provided a tutorial with direct instruction in the three heuristics and provided a platform for students to view various documents, take notes on those documents, and write an essay from their notes. In three separate, but related experiments, Britt and Aglinskas found that the experimental group, defined as those

students who had received instruction using the Sourcer's Apprentice, had significantly higher scores on a posttest of historical thinking skills compared to pretest scores. The control group, which did not receive explicit instruction in how and when to use the heuristics, did not have a significant increase in scores from pretest to posttest. As a result, the researchers concluded that direct instruction in historical thinking skills led to gains in the students' use of those skills.

Nokes and his colleagues (2007) also conducted research demonstrating the power of explicit instruction in disciplinary knowledge to increase students' use of disciplinary skills. They created four different teaching conditions: one that was content-focused and textbook-centered, one that was textbook-centered but focused on the heuristics, one that was content-focused but centered around multiple texts other than the textbook, and finally one that centered around multiple texts and focused on the heuristics. Through the use of these four conditions, Nokes and his colleagues hoped to determine if students could learn the heuristics and what conditions would lead to the greatest gains in content knowledge and heuristic usage. To measure the results, they conducted a pretest and posttest in content and another pre- and posttest in heuristic usage and compared scores across groups. They found that students who used multiple tests to study content scored significantly higher on the content posttest than all other groups. Likewise, students who learned the heuristics using multiple texts scored significantly higher on the heuristic posttest compared to the other groups. Thus, the researchers concluded that the use of multiple texts can lead to gains in students' content knowledge, while explicit instruction in the heuristics may help students learn and apply those heuristics when studying history.

Finally, Tally and Goldenberg (2005) investigated what disciplinary knowledge students exhibit as a result of instruction in how to analyze and evaluate the sources of texts. They designed an online task using the *American Memory* website, which led students through the process of reading primary source documents. Students then answered questions about the images, drew conclusions about the images and the time periods depicted in them, and completed a questionnaire. Tally and Goldenberg found that students across all academic abilities demonstrated the ability to read and evaluate documents, make inferences and use them as evidence, and construct an account of the past. They also found that students preferred history classes in which they analyzed primary sources even if it meant they had more work that was more challenging. Many of the students in their study reported understanding history better, learning more content, and being more motivated to learn. Thus, the results confirmed for the researchers the idea that when students learn historical thinking skills and use primary sources they can enjoy history, increase their motivation to learn it, and develop a more disciplinary understanding of history.

As a result of these studies, old assumptions about students' ability to learn disciplinary history, based on the false premise that students did not possess the necessary disciplinary knowledge, need to be challenged and reevaluated. Students indeed possess some disciplinary knowledge in history, even if they do not use it spontaneously. With explicit instruction in disciplinary history and its thinking skills, as well as the use of multiple and varied texts, we can improve students' learning in history and their motivation to study history. However, none of this research would have been possible without the earlier work of Lee, Wineburg, and others into the nature of expertise in

history. Without their work, the above researchers would not have known what disciplinary knowledge to study and what aspects of it might be possible for students to learn. In turn, we would not know that students can learn history in disciplinary ways.

The research conducted by Lee, Dickinson, Shemilt, Wineburg, and others in the United Kingdom, Canada, and the United States paved the way for this later research, which has led to a stronger understanding of how to support student learning in the field. Their studies of historians and students allowed them to draw conclusions about what history is, what experts do, and how students' thinking initially differs and develops. This, in turn, led to research that attempted to understand what is happening in history classrooms in the United States and how history instruction might be improved through the integration of disciplinary thinking into the history classroom. Studies that followed found that not only are students able to think in disciplinary ways, but they actually prefer it to traditional approaches to learning history. Student learning also appears to improve as a result of disciplinary learning (Britt & Aglinskas, 2002; Nokes, et al., 2007; Tally & Goldenberg, 2005; VanSledright, 2002).

Teaching and Learning Resulting from Research on Disciplinary History

In terms of the learning that occurs in many classrooms, the most common classroom experience appears to be teacher-centered activities that transmit the substantive knowledge of the narrative to students. In this traditional model, teachers lecture, while students take notes and remain silent except to answer questions based on the information from the lecture and the textbook. Students' knowledge is then assessed at the end of a chapter or unit (Bain, 2006; Cuban, 1991; VanSledright & Kelly, 1998). Student-centered activities, in which students discuss or debate topics and/or work

individually or in small groups to construct knowledge, and teacher modeling, during

which the teacher demonstrates his or her thinking and use of disciplinary knowledge, are

less frequent. Activities such as these may require students to use a variety of disciplinary

knowledge. The use of multiple and varied texts are also rare in most history classes

(Cuban, 1991). However, this need not be the only way to teach and learn history, and in

fact, there are classrooms in which students can and do learn in more disciplinary ways.

In these classrooms, teachers model the use of disciplinary knowledge, and students are

engaged in historical inquiry, work with documents, and draw their own conclusions

about the past. These reform-minded approaches to teaching history are the result of the

work of the earlier research cited above.

VanSledright (2002) provides one example of a classroom in which students acted

as historians to analyze documents and construct their own accounts of the past. Using

the work of Lee, Wineburg, and others as his foundation, VanSledright set out to

determine what happens when students learn disciplinary knowledge in history. Thus, he

taught American history in a fifth grade class for several months, while documenting his

teaching and students' learning. He also selected a subgroup of students to interview and

engage in performance tasks that asked them to read and analyze historical documents.

Throughout his time with the class, VanSledright taught his students how to read

historical documents, to consider perspective and bias, to contextualize and corroborate

documents, and to construct their own interpretation of past events to answer historical

questions. Students worked in groups as they studied the evidence and came to

conclusions, often using sources other than the textbook. With the subgroup of students,

he also interviewed them and asked them to complete a pre and post assessment in which

they analyzed primary documents and answered questions based on the evidence presented to them.

VanSledright found that his students had some success in learning to think historically. For example, he found that students improved their ability to identify the type of source they were using (primary or secondary), as well as their capacity to corroborate evidence across multiple sources. Students developed their critical thinking and analysis skills, while also learning how to determine an author's perspective and the reliability of evidence presented in documents. Finally, students developed a specialized vocabulary for discussing history. Although the gains in historical thinking were not the same for all students, students generally made progress relative to where they began in their reading comprehension and conceptualization of history. Therefore, VanSledright concluded that students even as young as fifth grade had the potential to use the skills of historians in order to improve their critical thinking, decision making, and motivation for learning.

Another example comes from Bain (2006) and his history classroom. During one lesson, Bain asked his students what they knew about Columbus, his voyage, and the people of Europe in the late 15th century. Many of his students retold the traditional story about Columbus, his financing from Ferdinand and Isabella of Spain, and the fear among many people at the time that the earth was flat. Students then read several excerpts from accounts written by historians in the 19th century, which reinforced the ideas that many of the students already had. Once they had finished reading, Bain prodded students to explain how they knew what they knew and to support their ideas with evidence, especially the notion that 15th century Europeans thought the earth was flat. Eventually,

Bain presented students with a picture of the statute of Atlas holding a globe dated to 150-73 BCE. He also had students read Carl Sagan's account of how Eratosthenes determined the circumference of the earth in the third century BCE. Finally, Bain gave students two selections from contemporary scholars. One advocated for the position that the Middle Ages was a time of interruption in intellectual progress, while the other rejected this idea.

In this lesson, Bain and his students used disciplinary knowledge (Lee, 1984; 2005), while they contextualized and corroborated evidence (Wineburg, 1991). Bain began with the students' own knowledge, admitting that they were not blank slates when they entered his classroom. From there, he pushed students to find evidence that supported their thinking but also information from the sources that extended or even contested their thinking. They constructed a picture of Europe in the late 15th century, considered what changed and what remained the same about European society and scientific knowledge, and attempted to determine if the Middle Ages had really been a period of decline as many of them had previously thought. Throughout the lesson, Bain's students acted as historians, using sources to build a narrative about the world of Columbus in an attempt to understand what his voyage may have meant to the people of Europe at the time.

Both VanSledright's (2002) and Bain's (2006) classrooms demonstrate that students are capable of working like historians and learning to think in disciplinary ways. Even if students do not spontaneously use disciplinary knowledge, they can be taught how to do so with substantial benefits in terms of their ability to think critically and motivation for learning. In both classrooms, students expressed their preference for

learning disciplinary history over traditional history, despite the more challenging nature of disciplinary history. Yet, it was only because students were taught the "structuring concepts of the discipline" (Levesque, 2008, p. 16) that they were able to learn in disciplinary ways, and they were only able to learn those concepts because Lee, Wineburg, and others had identified them in earlier studies of expertise in the discipline.

Seixas (2011) has taken it a step farther with the Historical Thinking project in Canada (http://www.historicalthinking.ca/). After identifying six aspects of historical thinking, Seixas and his colleagues are developing lessons to teach these aspects of historical thinking, along with assessments that would demonstrate student learning. The goal is to replace conventional multiple-choice assessments with more authentic tasks and reframe history instruction and learning in Canada. Through their work, Seixas and his colleagues have added to the work of Lee, Wineburg, and others, applied past research to school settings, and provided further opportunities to research student learning in history.

Political Science

There is no corresponding work on the nature of expertise in the American government subfield of political science, although there has been some research into the differences between political science experts and novices (Voss & Post, 1988). Without such research, we are left with little information about what experts do and how that may be useful for instruction in high school classrooms. Part of the reason no such work exists in political science is due to the complicated and diverse nature of the discipline. Political science is not a simple discipline with an easily explained structure and methods, and its history involves multiple disciplines and traditions.

Political science originated as part of the American Economic Association (AEA) and the American Historical Association (AHA) but separated from them because of the political and philosophical orientation of these groups. The members who formed the APSA believed that the focus of their organization should be to impact politics and the governmental system (Gunnell, 2006). Known as the systemic tradition, this political science movement focused on the governmental system as a whole, the relation of the various parts of the system to each other, and how the overall system maintains itself or disintegrates. Political scientists in this tradition saw their main task as the establishment of a unitary nation-state and the development of a virtuous national citizenry (Dryzek, 2006; Easton, 1985; Kanter, 1972). The state was the centerpiece of the discipline, which was studied in order to advance the political agenda of those who sought to strengthen the American government and spread the ideals of American democracy (Dryzek, 2006).

Later, political scientists in the United States shifted their focus away from the state and toward the behavior of the individuals who operate within and outside the system. The institutions of the government still mattered, but only as places in which human actors functioned and struggled for power and influence. Political behavior came to be viewed as the most appropriate source of information about why things happened as they did. As a result, new methodologies developed based on social cognition and the other social sciences, including experiments, case studies, sample surveys, interviews, observation, regression analysis, rational modeling, and other quantitative methods. Within this tradition, known as the behaviorist tradition, the individual and individuals acting in groups became the main unit of study, while the study of policy and institutions

declined (Druckman, Green, Kuklinski, & Lupia, 2006; Dryzek, 2006; Easton, 1985; Eulau, 1986, Kanter, 1972).

Today, political science can still be defined in many ways, although the behaviorist tradition has left a lasting impression on the discipline. According to the APSA (2009), political science is the study of governments, public policies, political processes, political systems, and political behavior. The discipline includes the subfields of political theory, philosophy, ideology, and economy, as well as policy studies and analysis, comparative government, and international relations. Political scientists not only study what government is and how it works, but also how citizens behave and why they do so (APSA, 2009). Additionally, they are trained to see multiple aspects of issues, to detect possible compromises and areas of agreement or disagreement between parties, and to be open to new evidence and arguments to produce better ideas and policies (Jervis, 2002). As a result, the methods of inquiry for political scientists has developed over time and grown to accommodate new questions and problems, such that no single problem or method defines or unifies the discipline. Rather, the questions that are asked and the desire to understand and explain phenomena related to the government and politics unify the various subfields of political science (Druckman, et al., 2006). Political scientists have not abandoned their original concern with constitutions, governmental institutions, and the actions of elected and appointed officials, but they also study political behavior, voting, informal opinion, and pressure groups (Eulau, 1986, Key, 1958; Lasswell, 1951).

Voss and Post (1988) conducted a study that has given us some additional insight into the work of political scientists, especially the differences between experts and

novices. In their study, Voss and Post asked political science experts and novices to imagine that they were agriculture ministers in the Soviet Union who were tasked with improving crop productivity. Participants thought aloud as they attempted to solve the problem. Voss and Post concluded that experts and novices understood the task differently, approached the task in different ways, used different aspects of the problem to solve it, and used different strategies to reach their conclusions. Their study demonstrated that experts in political science have different disciplinary knowledge than novices, but they did not focus on determining what that knowledge is or boil it down to specific heuristics. For example, they did not specifically study what questions experts ask, what data they use to answer their questions, how they use that data, and what they do with the results of their work. Instead, they analyzed how participants thought about and responded to the problem and then compared their responses in order to draw conclusions about the differences between experts and novices.

Thus, while Voss and Post's work provides a starting point, it does not help us determine what each aspect of expertise means specifically in political science in the way that Wineburg's (1991) study or Lee's (1984; 2005) analysis did for history. The proposed study, then, would be aimed at developing an understanding of the disciplinary knowledge of experts in political science. In other words, when faced with a typical task in the discipline, I would like to learn what experts do when they go about solving the task; this would extend the work of Voss and Post who focused on how experts think about the task itself. Such research on the nature of expertise in the subfield of American government will offer a better understanding of what disciplinary thinking looks like and what knowledge political scientists who study American government use, which may in

turn lead to the development of a framework for studying American government classrooms and the teaching and learning that takes place there. Ultimately, this research may lead to the development of an alternative to the traditional way of teaching government, specifically one that challenges students, develops their higher order thinking, and combats boredom and disengagement. The results of this study might be used to identify goals for learning and research on learning in American government courses using common conceptions of the discipline of American political science based in research.

Defining Expertise

As we have seen from the above literature, the work done by Lee, Wineburg and others into the nature of expertise in history has had a major impact on teaching, learning, and research in history education. Their work with experts helped to define what it means to "do" history and what skills and concepts are necessary in the discipline. This research led to studies of classrooms, teachers, and students that allowed researchers to draw conclusions about how students learn and how teachers can improve students' learning in history. The starting point, then, was the research with experts, which is missing for political science and which I propose to pursue in political science. We can look to the literature on studying expertise for insights about how others have worked with experts and what methods might help us gain knowledge about political science.

Substantial research has been conducted into the cognitive processes of experts in various disciplines and activities. These studies have offered insights into the knowledge and skills necessary to become an expert in a particular domain, and in some cases, have allowed for the development of training and apprenticeship programs. This line of

research evolved from studies conducted by Adrian de Groot that looked at the nature of chess expertise. De Groot began by studying the intellectual capabilities and coding processes of chess masters and then compared them to less experienced chess players (Posner, 1988). Since then, numerous other studies in domains such as mathematics, radiology, aviation, surgery, physics, and history have emerged and been supported by revolutions in cognitive psychology and technology (Alexander, 2003; Wineburg, 1991). Still, there remain several gaps in our knowledge about experts and expertise, particularly in political science.

Research related to experts and expertise has increased considerably in the last several decades, as the development of cognitive psychology and new technology have allowed researchers to study the mental processes of individuals and create computer and other models of these processes. This research has been conducted in fields such as medicine, physics, and mathematics, as well as in chess and other games. The results have demonstrated the strategies used by experts in these areas in terms of their problem solving, decision making, and diagnosing, and have allowed researchers to develop theories about experts and expertise (Alexander, 2003; Berdard & Chi, 1992; Wineburg, 1991).

However, as these research studies have shown, defining what it means to be an expert and/or to have expertise is not always a straightforward matter. In its simplest terms, an expert can be defined as an individual who performs particularly well in a given domain (Krosnick, 1990) or who has a reputation as an expert due to academic degrees or certifications (Voss & Wiley, 2006). Similarly, expertise can be defined as the possession of a large body of knowledge and disciplinary skills related to a given domain (Chi,

Glaser, & Rees, 1982). Both of these definitions are correct, but they are also incomplete. Their simplicity hides the complex and sophisticated nature of the cognitive processes that experts use. They also conceal the multifaceted nature of expertise and the beliefs, motivations, and personality traits that may also influence expertise (Alexander, Murphy, & Kulikowich, 2009).

Research has shown that experts within a domain differ from domain novices and other non-experts in their beliefs about the nature of knowledge and how it is gained, the amount and organization of their knowledge, the relationships they see between concepts within the domain, how they represent problems, and the strategies they use to solve problems and make decisions (Alexander, Winters, Loughlin, & Grossnickle, 2012; Berdard & Chi, 1992; Glaser, 1985; Schraw, 2006; Voss & Post, 1988). In general, experts believe knowledge is gained through inquiry and study and evolves as new information becomes known. Experts also have a large, organized body of domain knowledge that then influences their perceptual processes and the strategies they use to solve problems (i.e., disciplinary knowledge). While the size of their body of knowledge is important, the more crucial aspect of experts' knowledge is the way in which it is organized. Specifically, experts structure knowledge in ways that make it more accessible, functional, and efficient. They tend to make more connections between discrete pieces of information and create mental patterns such that information is cross-referenced and creates a rich network of concepts. They often base these concepts on underlying principles and the meanings implicit in information, while novices tend to organize concepts on the basis of surface features (Berdard & Chi, 1992; Glaser, 1985). This way of organizing knowledge often leads experts to different problem

representations and problem-solving strategies, which lead to better decisions (Berdard & Chi, 1992).

As a result of the research that has been conducted (e.g., Berdard & Chi, 1992; Glaser, 1985; Voss & Post, 1988), several conclusions can be drawn. Individuals represent problems based on their understanding and interpretation of the problem and what they know about the various aspects of the problem. Their domain knowledge and how they organize that knowledge assists them in understanding what they are asked to do in the problem and in developing a plan to solve it. Experts tend to begin the process of representation by classifying the problem and picking out the relevant features of the problem. They also make inferences about the problem, which can often be more efficient due to their larger and richer knowledge base, based on the explicitly stated facts in the problem. Once they have classified the problem, chosen the relevant features of it, and made inferences about it, they can then determine which solution procedures best fit the type of problem with which they are dealing. Novices, on the other hand, tend to dive right in and begin to solve the problem based on the information explicitly stated in the problem (Berdard & Chi, 1992; Glaser, 1985). Using the above example of crop productivity in the Soviet Union (Voss & Post, 1988), novices immediately began to determine how crop productivity could be increased, while experts took time to consider multiple aspects of the situation. They determined whether the problem related to the depletion of nutrients in the soil, the lack of farmers and/or farmland, the economic system, or some other aspect. They then determined the solution to the problem based on what they believed to be the cause of problem.

These researchers (Berdard & Chi, 1992; Glaser, 1985; Voss & Post, 1988) have also found that a number of strategies exist to solve problems, including means-ends analysis, subgoaling, and analogical reasoning, and each of these can be used in different ways. For example, in means-ends analysis, individuals can work forward or backward in order to reduce the difference between the desired situation and the current situation. Novices tend to work backwards from the goal toward the current situation, while experts often work in the opposite direction (Berdard & Chi, 1992). In the above Soviet Union example (Voss & Post, 1988), novices began with the goal of increased crop production and worked backward to determine how they could increase the production. They thought about how to increase the amount of crops being produced and came to conclusions about providing incentives for more individuals to farm or for existing farmers to increase the amount of crops they plant each year. Meanwhile, experts began by trying to understand the current situation, namely the need for more crops, and how and why the situation existed. Their thinking led them in different directions and to different problem types such as economic, political, and social problems, which may have distinct solutions. Thus, Voss and Post found that how novices and experts organized knowledge and utilized problem-solving strategies made the difference in how they solved the problem. Experts attempted to match the strategies to the problem type and relied on the structure of their knowledge to produce more competent performances and often better decisions (Berdard & Chi, 1992).

Based on the above research and numerous other studies (see Alexander, 2003; Chi, 2006; Hatano & Oura, 2003; Feltovich, Prietual, & Ericsson, 2006; Fiske, Kinder, & Larter, 1983; Glaser & Chi, 1988; Krosnick, 1990; Lajoie, 2003; Schraw, 2006; Voss &

Wiley, 2006), several generalizations can be made about experts and expertise that lead to more complete definitions. Expertise is not necessarily something that one either has or does not have. Instead, expertise appears to be a continuum from expert to novice along which individuals with greater or lesser expertise fall (Alexander, et al., 2009). Individuals with more expertise tend to know more, organize information better, and perform better in domain-specific tasks than novices. They generate better solutions to problems, faster and more accurately, due to their superior knowledge structures, and they can effectively recognize the underlying structure and features of problems. Their analysis of problems is both quantitative and qualitative, which allows them to develop sophisticated problem representations and select and apply appropriate procedures to solve problems. Often times, experts show minimal cognitive effort, especially when problems are familiar, although they do demonstrate a sense of self-awareness and self-monitoring. They recognize what they do and do not know, can identify when they make an error, and often admit to their confusion. However, they do not allow these issues to prevent them from solving problems. Instead, they rely on their extensive domain knowledge and the resources available to them to competently solve problems and make decisions.

There are also constraints to expertise and areas in which experts can fall short (Berdard & Chi, 1992; Chi, 2006; Lajoie, 2003). Specifically, expertise tends to be domain specific, and experts often perform like novices in domains outside their own. Similarly, they may not be able to adapt to problems with structures that are different from typical or acceptable structures in their domain. Also, experts can be overly confident in their own abilities, while also being highly critical, and sometimes

inaccurate, in their assessment of novices' abilities. Further, their focus on the principles involved in a problem may cause experts to overlook surface features, which can be important for a full understanding of a problem. Finally, experts' extensive knowledge in a given domain can create a mental set or biases, which may prevent them from seeing problems and/or solutions in new and unique ways.

Thus, being an expert and having expertise is much more than performing well at a given task. It also involves a unique set of disciplinary knowledge that allows experts to perform better than novices on domain-related tasks. These knowledge structures and skills are connected in a cognitive network that allows for speed, efficiency, and accuracy and demonstrate the extensive amount of time and training required to become an expert.

Concept Mapping

One method used by researchers to study the differences between novices and experts has been to ask study participants to create a concept map of a particular discipline or topic within a discipline and then score those maps based on qualitative and quantitative aspects of the maps. In doing so, researchers have been able to collect graphic representations of participants' conceptual knowledge, both their substantive knowledge and the organization of that knowledge, and the relationships that participants understand to exist between and among the concepts (Freeman & Jessup, 2004; Miller, Koury, Fitzgerald, Hollingsead, Mitchem, Tsai, & Park, 2009; Williams, 1998).

Traditionally, concept maps have consisted of concepts within a specific discipline organized in a hierarchy with the most general concepts at the top and the least general ones at the bottom. Various aspects within the hierarchy are then linked together using lines to represent the relationship(s) that exist between and among the concepts

(Miller, et. al., 2009; Novak & Gowin, 1984). However, other structures besides hierarchies have also been used by researchers and study participants, such as webs in which the central concept of the discipline is placed in the center with related and subordinate concepts branching out from it (Freeman & Jessup, 2004; Williams, 1998). In these types of concepts maps, lines connecting the various concepts to the central one represent the relationship(s). In either case, the main features of the concept map are the same, namely the concepts and the links that demonstrate how various concepts are connected to each other.

Once the maps have been created, researchers can then score them using either quantitative or qualitative methods or both. Novak and Gowin (1984) developed the first quantitative scoring scheme for concept maps, in which they awarded points for various features of the maps. For example, they awarded points for the validity of the propositions within the map, as well as for each level of the hierarchy, the branches, the number of levels, and specific examples used to illustrate a concept or relationship. Concept maps with higher scores were determined to be more sophisticated due to their greater breadth (as determined by the number of concepts), complexity (determined by the number of links), and depth (based on the levels of the hierarchy). Other researchers have generally followed a similar scheme when scoring concept maps qualitatively (Miller, et. al., 2009).

In other cases, researchers have used qualitative methods to score concept maps. When doing so, these researchers have compared the maps generated by participants against an ideal or preferred one based on the concepts used in the maps and the relationships described by them. The greater the similarity between the generated map

and the ideal map, the more sophisticated the individual's knowledge of the discipline or the concepts was assumed to be (Miller, et. al., 2009).

In both cases, quantitative and qualitative scoring methods, researchers have concluded that concept maps with more concepts, levels, and links demonstrate more conceptual knowledge and expertise within a discipline (Freeman & Jessup, 2004; Miller, Koury, Fitzgerald, Hollingsead, Mitchem, Tsai, & Park, 2009; Novak & Gowin, 1984; Williams, 1998). As was noted above, experts tend to organize knowledge in ways that make it more accessible, functional, and efficient. They make more connections between discrete pieces of information and create mental patterns such that information is cross-referenced and creates a rich network of concepts. Novices, on the other hand, tend to organize concepts on the basis of surface features with fewer links and relationships between concepts, which may be a result of their lack of substantive knowledge related to the discipline (Berdard & Chi, 1992; Glaser, 1985). Thus, concept maps are one way for individuals to represent their knowledge and for researchers to distinguish between disciplinary experts and novices.

Conceptual Framework

In order to study expertise in political science, it was necessary to study experts engaging in their discipline as I attempted to determine what disciplinary knowledge they used and how they used it. The conceptual framework below (Figure 1) details many aspects of expertise, including epistemic beliefs about what counts as knowledge and evidence, conceptual knowledge, how that knowledge is organized and represented, and strategic processing. Due to the limited size and scope of my study, I concentrated on the conceptual knowledge and disciplinary beliefs of participants, as I believed these to be

the aspects of expertise I was most likely to observe using the methods I have chosen, although there was some evidence of strategic processing as well. I am hopeful that this could become a foundation for teaching, learning, and research in K-12 classrooms, much as studies of experts' disciplinary knowledge in history have done for history education. The goal of this line of research is to use this disciplinary knowledge as a foundation for defining critical thinking in political science that could be targeted in K-12 classrooms. As can be seen in history education, teaching students how to think like experts and how to use their disciplinary knowledge is another way to teach them these critical thinking skills. Voss and Post (1988) began the process when they compared experts and novices in political science, but there is more to be learned. This study builds on their work by determining in more detail how political scientists solve a given problem, what knowledge and data they need in order to do so, and how they use that knowledge and data in their solutions.

Studying these aspects of expertise required the use of several different qualitative research methods, including interviews and task completion, which I detail in the next chapter. Ultimately, the goal was to understand the nature of expertise among political scientists studying American government in order to have a foundation for studying learning in government classes with the same research-based conceptual understanding of the discipline and for studying the best methods for teaching and learning government.

Figure 1. Conceptual framework.
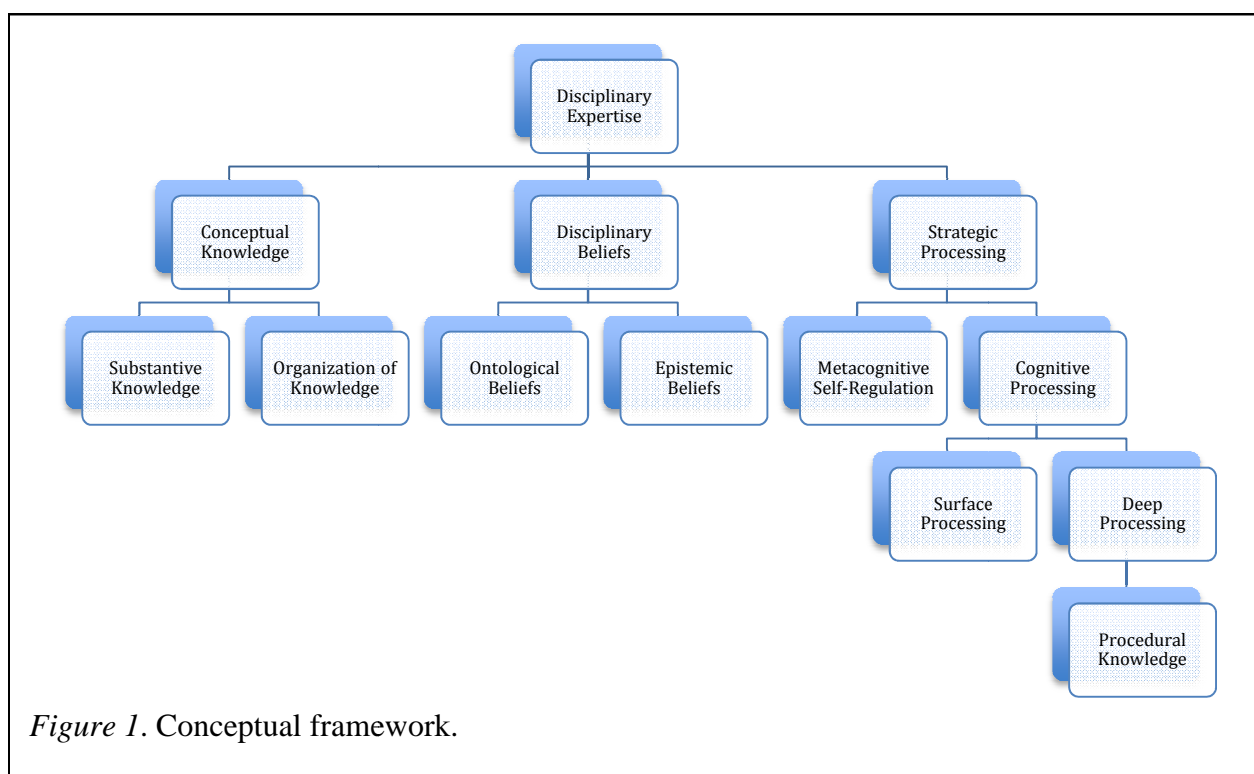
Conceptual knowledge, disciplinary beliefs, and strategic processing are important aspects of disciplinary expertise and in many ways are at the heart of what makes someone an expert in their field. As was indicated in the section above on disciplinary knowledge, novices and experts can have similar substantive knowledge but different ways of organizing that knowledge, beliefs about the discipline, and strategic processing of information (Alexander, et. al., 2009; Berdard & Chi, 1992; Glaser, 1985; Voss & Post, 1988). These differences, at least in part, then account for the divergent ways in which experts and novices solve a problem and draw conclusions within the discipline.

Political scientists' conceptual knowledge includes their substantive knowledge about the phenomenon being studied, as well as the way in which they organize that knowledge (APSA, 2009; Druckman, et. al., 2006; Dryzek, 2006; Easton, 1985; Eulau,

1986; Kanter, 1972). The phenomenon studied refers to structures, institutions, and behaviors that occur within political science and influence the functioning of the government, politics, and the individuals involved in them. For example, a phenomenon could be the election of a certain individual to a political office, the relationship between different branches of the government, or the roles and responsibilities of citizens. Political science experts have certain interests and preferences in terms of what phenomena they choose to study, but there is a common link in that all of the phenomena studied fall within the discipline of political science. A political science expert is only an expert within his or her own field, and therefore would not be considered an expert when discussing or studying phenomena in another field.

Additionally, political scientists have disciplinary beliefs, both ontological and epistemic, about the phenomena they study. These disciplinary beliefs lead them to ask questions and seek more information about the phenomenon. These questions often involve efforts to understand why or how a phenomenon exists or occurred as it did, and political scientists use a set of research methods in their attempts to understand and explain. Although not all of the research methods are unique to political science, since the discipline borrows research methods from other fields, the research methods are chosen based on the questions asked and phenomenon studied. Therefore, the research methods are specific to political science since they are used in an effort to answer political science questions (APSA, 2009; Druckman, et. al., 2006; Dryzek, 2006; Easton, 1985; Eulau, 1986; Kanter, 1972).

Finally, political science experts, like other experts, use strategic processing and problem solving strategies that are unique to the discipline as they go about their study

and perform in the discipline (Berdard & Chi, 1992; Glaser, 1985; Voss & Post, 1988). These strategies can include working inductively or deductively to solve a problem, using algorithms, coding and categorizing information, and organizing information in particular ways, as well as using other strategies (Schraw, 2006; Voss & Post, 1988). In some cases, the strategies may not be unique to political science, but they will be chosen by the expert in an attempt to work with information and data that is unique to a political science phenomenon. In this way, the strategies will be useful for answering political science questions.

In the present study, I investigated aspects of disciplinary knowledge – conceptual knowledge, disciplinary beliefs, and strategic processing - as I studied the nature of expertise in political science relevant for courses in American government and civics. Although I have drawn some conclusions about what phenomena are studied, what questions are asked, and what research methods are used in political science based on my review of the available research and the pilot study I conducted, I hoped to confirm these initial findings and gain new insight through this study. I also hoped to obtain knowledge about what strategies political scientists use to solve problems in their field in order to have a more complete picture of the disciplinary knowledge political science experts use and the nature of expertise in political science.

Chapter Three: Methods

In my third chapter, I outline the methods I used to study the nature of expertise in American political science. Included in this chapter is a brief discussion of the pilot study I conducted with students pursuing graduate studies in political science, as well as how my interviews with these students helped me develop the tools I used to conduct my study.

In order to study the phenomenon of expertise in American political science, I asked several research questions:

1) Is it possible to describe the dimensions of expertise in political science in the subfield of American government and if so what are the dimensions?

2) Can problem-solving tasks that represent expert work in this area elicit experts' disciplinary knowledge parallel to what has been done in history education research?

3) What disciplinary knowledge do American political science experts use when engaged in such problem-solving tasks?

4) What disciplinary beliefs do American political scientists have about the discipline?

To answer these questions I used data collection methods that included interviews and problem-solving tasks. Both of these methods provided information and insight that helped me answer at least one of the above questions.

Participants

The participants in the study included ten political scientists currently teaching and researching at colleges or universities in the mid-Atlantic region. The remaining

participants were four college students studying to become social studies teachers who completed an introductory American government course at the undergraduate level. I included the four students as a small comparison group in order to make distinctions between the knowledge and processes of experts and those of individuals with less expertise. The comparison group also allowed me to define different levels of expertise in American political science. I specifically chose not to include current social studies teachers, however, because they possess several types of expertise, such as expertise in curriculum and pedagogy, which are not the same as expertise in political science. The students, on the other hand, had less expertise in standards, curriculum, and pedagogy, making it less likely they would be influenced by their knowledge of these aspects of teaching.

Political Scientists. I decided to include ten political scientists in order to balance the number of participants necessary to be able to draw conclusions with the practical reality of the limited number of experts who would be willing and available to participate. Other researchers have included various numbers of participants, ranging from over 100 to just one. For example, Royer, Carlo, Dufresne, and Mestre (1996) had 52 experts (130 participants total) in their study, which used tests to compare experts and novices. At the other extreme is the work by Engle and Bukstel (1978), which included one expert, one life master, one average player, and one novice bridge player. Engle and Bukstel administered three tasks in order to examine the differences in performance based on skill level. The tasks included a simulated bridge tournament, a memory task in which they asked participants to reconstruct four bridge hands after briefly viewing the hands, and a perception task that was similar to the memory task but used different

stimuli. Wineburg (1991) included eight experts and eight novices in his study of historical problem solving, during which he interviewed participants and conducted problem-solving tasks with them. Finally, Voss, Blais, Means, Greene, and Ahwesh (1986) investigated subject matter knowledge and the use of informal reasoning in economics by asking participants questions about changes in automobile prices, the federal deficit, and interest rates. Their study included 30 participants in (six groups of five participants with varying degrees of expertise in each). My pilot study included eight participants (My goal was to have between five and ten participants, which was based mostly on Wineburg's (1991) work). As a result, my target number of participants was eight to ten, which I achieved.

All ten political scientists work in academia and study American government in the behaviorist tradition (Eulau, 1986). Political scientists within this tradition view individuals and groups and their political behaviors as the focus of their empirical study. These political scientists study individuals, groups, organizations, and institutions through scientific inquiry and analysis (Eulau, 1986). It was important for me to study these political scientists since their work is closest to high school civics and government. Rather than theorize about government, they study the structure and function of the American government, just as we ask our students to do.

The participants needed to work in academia because they are most likely to be engaging in research studies and using disciplinary knowledge on a regular basis. Because of my proximity to several colleges and universities in the region, I recruited political scientists from institutions of higher learning in the mid-Atlantic region. All ten political scientists completed a doctoral degree and conduct research in the area of

American political science (see Table 2 for additional information about the experts).

Due to the diverse nature of the field and the numerous areas of concentration, it would

be nearly impossible for me to have enough representatives from each concentration and

subfield to draw meaningful conclusions. Additionally, since the requirement in many

elementary and secondary schools is that students complete coursework in American

government, it made sense to study those political scientists responsible for studying the

same aspect of political science.

Table 2

Characteristics of Experts

Expert	Type of Institution (where researching/teaching)	Years since doctoral degree	Subfield
E1	Public, doctoral/research university	15	Institutions
E2	Private, teaching university	10	Institutions
E3	Public, doctoral/research university	3	Behavior
E4	Private, teaching university	3	Institutions
E5	Public, teaching university	7	Institutions
E6	Private, doctoral/research university	6	Behavior
E7	Public, doctoral/research university	8	Behavior
E8	Public, doctoral/research university	15	Behavior
E9	Public, doctoral/research university	4	Institutions
E10	Public-supported[1], doctoral/research university	6	Behavior

Students. The four student participants served as a small comparison group. I

purposefully chose not to work with high school teachers as the comparison group

because there was a risk that the comparison would be between individuals different

types of expertise rather than between individuals with varying degrees of expertise in

political science. High school teachers have several different types of expertise, and while

they may have some expertise in American government, much of that knowledge comes

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[1] A public-supported university operates with a mix of private and public funds but is not part of the state system of higher education.

from social studies standards, curriculum, and assessments. This type of expertise is not the same as expertise in political science since it does not derive from the study of political science. Students in an introductory American government class will not be influenced in their understanding of political science by curriculum and standards in the same way that teachers would have been.

All four students attend different universities, and although I did not specifically look for students who were studying to be social studies teachers, all four students in the study are pursuing a degree and certification in social studies education. S3 is the only student who had completed any student teaching at the time of her participation in the study. Her student teaching assignment was in a middle school geography class. I did not believe this assignment impacted her knowledge of civics and government standards and curriculum since there are separate standards for geography and civics and government in the state in which she student taught. She did not engage in using or planning with the civics and government standards in her assignment. Also, S4 had observed in history classrooms as part of her pre-student teaching, but this observation did not involve the use of civics and government standards. Therefore, I believed that her knowledge of political science had not been influenced by knowledge of civics and government standards and curriculum. S1 was in her senior year pursuing an undergraduate degree in history at the time of the study. She had been accepted into a graduate program in teacher education for social studies, and she completed the introductory undergraduate political science course as part of the pre-requisites for entering the graduate program. She did not have any formal training in using the civics and government standards. Finally, S2 is a non-traditional student in that she did not pursue her degree immediately following high

school. She worked for several years as a paraprofessional in an elementary classroom with students with severe disabilities before returning to school to pursue a degree in education. I did not feel that her time as a paraprofessional would impact the results of the study, since the social studies curriculum in elementary school, particularly for students with the type of cognitive disabilities that she worked with, was not likely to have influenced her conceptions of civics and American government. The main requirement for participation in the study as a student was that they had recently completed an introductory college-level American government course, which these four students had. S2 did not have any additional training in political science or teaching civics and American government beyond the training that the other three students had. Table 3 includes additional information about the students.

Table 3

Characteristics of Students

Student	Type of University Attending	Year in School	Undergraduate Major	Major Area(s) of Focus within Social Studies
S1	Public, doctoral/research university	Senior	History	History
S2	Public-supported, teaching university	Sophomore	Political Science & History	Political Science, History
S3	Public, teaching university	Senior	Secondary Education, Social Studies	Geography
S4	Public, teaching university	Junior	Secondary Education, Social Studies	History

Data Collection

To examine the nature of political scientists' expertise and students' knowledge, I needed to access and analyze their thinking and how they conduct their work. Researchers have used a number of methods to examine experts' and novices' thinking and working, including observations, interviews, protocol analysis, concept mapping, card sorting, and other tasks (Ackerman & Beier, 2006; Chi, 2006; Clancey, 2006; Ericsson, 2006; Ward, Williams, & Hancock, 2006). I used both standardized, open-ended interviews and task completion (see Table 4) in the same 30-60 minute sitting with each expert and student. The full protocol I used in the study can be found in Appendix B.

Table 4

Data Collection Methods

Data collection	Relevant research questions
Concept sorting and mapping task	Is it possible to describe the dimensions of expertise in political science in the subfield of American government and if so what are the dimensions? What disciplinary beliefs do American political scientists have about the discipline?
Problem-solving tasks	Is it possible to describe the dimensions of expertise in political science in the subfield of American government and if so what are the dimensions? Can problem-solving tasks that represent expert work in this area elicit experts' disciplinary knowledge parallel to what has been done in history education research? What disciplinary knowledge do American political science experts use when engaged in such problem-solving tasks?
Interview	Is it possible to describe the dimensions of expertise in political science in the subfield of American government and if so what are the dimensions? What disciplinary beliefs do American political scientists have about the discipline?

One way to ascertain how individuals think is to interview them and discuss what, why, and how they do what they do. However, interviews alone are insufficient to capture all of the intricate and complex cognitive processes that occur as individuals engage in the activities of their field. The difficulty of obtaining an accurate accounting of thinking from interviews can be explained by several factors. First, individuals are not always able to describe their thoughts, behaviors, and strategies in ways that allow a novice to understand. Second, there are often discrepancies between what people report they do and what others observe them doing. Therefore, it is often impossible to achieve a full picture of individuals' thinking from interviews alone (Ericsson, 2006).

In light of these limitations, I also used another method in an attempt to capture participants' thinking. I used two tasks during which participants thought aloud. In think aloud tasks, researchers elicit verbal reports of thoughts and thought processes from participants as they work through a task. These voiced thoughts are then recorded and encoded into meaningful categories. Researchers can then make inferences and draw conclusions about the underlying thought processes of the participants (Ericsson, 2006). These tasks are meant to add another layer of information about how experts think, especially concerning how they organize the knowledge they have. The underlying assumption for the use of these tasks is that problem representation is the main difference between experts and novices; how an individual represents a problem determines how they reason about it, remember aspects of it, solve it, and learn from it. There are four major types of tasks, which can be used separately or in some combination to reveal something about the structure of experts' knowledge. These four types are: recall activities, tests of perception, categorization tasks, and verbal reports centered on

problems and involving think-aloud protocols and explanations (Chi, 2006). I used verbal

reports centered on problems as a way to observe the political scientists and students as

they problem solve, which revealed their disciplinary knowledge and how they use it.

I conducted one interview and task session with each political scientist and

student in one meeting. I began with the concept sorting and mapping task and problem-

solving tasks, since it was possible to ask the interview questions via email or phone

conference if we ran out of time during the in-person meeting. Each meeting lasted

approximately 30-60 minutes. Again, the practical reality of a limited number of experts

who were willing and available to participate led me to seek a balance between the need

for time with the experts to gain meaningful data with the need to make the time short

enough that experts would agree to participate. Therefore, I considered the interview

questions and tasks carefully and designed them based on my experiences during a pilot

study (for a complete protocol, see Appendix B).

Concept sorting and mapping task. I asked the participants to complete a

concept sorting and mapping task and think aloud as they completed it (see Appendix B).

The concept sorting and mapping task is an adaptation of the work of Harris (2008) and

involved participants dividing cards into categories or arranging them in a way that

reflected their understanding of the words, concepts, or themes on the card. A concept

sorting and mapping task can be helpful because experts organize knowledge around

important concepts and often notice patterns that novices do not. The task, then, allows

the participants to demonstrate some of the patterns and connections between concepts

that help them think about and understand government and political science (Berdard &

Chi, 1992; Bransford, Brown, & Cocking, 1999; Glaser, 1985; Voss & Post, 1988).

For my study, I asked participants to arrange cards with terms and topics related to civics, government, and political science "in a way that [made] sense" to them[2]. I anticipated that the participants would organize the cards into a pattern that reflected their understanding of the terms and construct a concept map that reflected their understanding of the topics and connections between them. I intended this activity as a way for the participants to show some of the patterns and connections that they use when thinking about the field of American political science in general.

I chose terms and concepts found in the syllabi of upper-level (300 and 400 level) undergraduate courses in American government and political science, and I also asked two political scientists (who did not participate in the study) to share what they believed are the 20 most important concepts in American political science. The list was then reviewed by a third political science (who also did not participate in the study) who suggested additional revisions to the list. The final set of words included terms and concepts that were common across the syllabi and political scientists' suggestions (see Appendix B for a complete list of words). By proceeding as I had, I was able to include concepts that were more likely to cause my participants to think and make judgments that show their disciplinary knowledge, as well as their cognitive processing. I also allowed the participants to discard any words or to add additional terms or concepts that they feel are missing, which I believed would give me additional information about how they conceptualize civics and government and political science and prevent them from feeling limited by the terms and concepts I have chosen (see Appendix B for the full card sorting and mapping protocol).

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[2] This is similar to the prompt used by Harris (2008) and Seixas (1997) in their studies, which used a concept sorting and mapping type of activity.

Problem-solving tasks. The problem-solving tasks that I created involve domain-related information and skills, but an expert may not be involved in the exact activity or may not attempt to solve the particular task on a day-to-day basis. Such tasks allow both novices and experts to perform the tasks without experts necessarily having the advantage of greater knowledge of the information involved in the particular task. However, the tasks cannot be that different from experts' familiar tasks because then they become a test of how experts adapt to new situations rather than a model of their expertise. Thus, it was important that whatever the task, it remained close to familiar tasks for the experts. In that way, it would be a test of how political science experts problem-solve and organize knowledge.

The two problem-solving tasks that I used are outlined below in Table 5. I audio recorded all of the tasks in order to assist me with analysis. I chose these two tasks based on a pilot study I conducted, which I detail below. I developed these new problem-solving tasks after completing a pilot study with eight graduate students from two universities.

Table 5

Dissertation Study Problem-Solving Tasks

Task	Task Question
1) Major Legislation task	How does the control of Congress, in terms of which party holds the majority, impact the passage of major legislation that the president supports? How would you study such a question?
2) Government Shutdown task	Whom do voters blame when there is a federal government shut down? Why? What would be the political impact of a government shutdown due to disagreements over the federal budget? How would you study such a question?

I chose these two tasks for several reasons. First, both tasks meet the definition of political science as described by the pilot study participants. All of the participants mentioned the study of power as part of political science, and both of these tasks involve some aspect of power, whether in terms of who has power or how that power is used or impacts relationships. Second, the participants also described political science as a discipline that asks questions, particularly how and why questions, and is research-oriented, in an attempt to understand phenomena. Both of these tasks are questions that attempt to explain how and why power exists and influences relationships within the government, and both tasks involve the use of research methods and data collection and analysis. Also, both of these tasks are research-oriented rather than practical. Several of the participants had concerns about some of the tasks I piloted (e.g., the campaign task and the 14th Amendment task in Table 6) because they were too practical and related more to policy rather than political science. As the participants explained, the purpose of political science is to explain the institutions of the government and politics and the behaviors of those involved in them, whereas policy is an attempt to predict outcomes based on behaviors and policies and then influence those institutions and political and governmental actors to achieve desired outcomes.

Therefore, the two tasks I chose for this study focused on the empirical nature of American political science, and, rather than asking about how the experts might influence policy or predict behavior, the tasks asked them to hypothesize and explain based on the information at hand. Additionally, these tasks provided a limited amount of context in response to participants' comments that some tasks read more like interview questions than a problem-solving task (e.g., the research task, see Table 6). Finally, the pilot study

participants noted that political science has a number of subfields and concentrations and not all political scientists would have the conceptual knowledge necessary to complete the tasks. As a result, I narrowed my focus to American political science (and political scientists focused on American government) and attempted to include different aspects of American government. Thus, the first task focused on government institutions and governing behavior, while the second one centered on campaigning and electoral behavior. Both tasks also addressed the separation of powers and checks and balances, while the first task also dealt with the passage of legislation and the second one dealt with voters. Additional details about the pilot study and how I came to these conclusions are below.

Interview. Interviews are used to gain insight into the participants' thinking and their experiences. In this study, interviews allowed me to ask questions about the participants' academic backgrounds, their interest in political science, and the research they have conducted. All of the interviews were audio recorded to aide in analysis. This information helped me answer questions about what political scientists do, how they know what they know, what research questions they ask and phenomena they study, and what research methods they use in order to study phenomena and find answers to their research questions. The interview questions included the following (the full protocol can be found in Appendix B):

1) How would you define political science?

    a. What is the goal of political science?

    b. How do you and others achieve the goal?

2) What topics in political science are you most interested in?

a. Did you do any research related to those topics during your graduate

program?

b. Are you currently doing any research related to those topics?

c. Are you conducting research related to other topics in political science?

If so, what topics? Why are you researching these topics?

3) What research methods do you use in your work?

a. Where did you learn those methods?

b. What types of data can you collect and/or use in your work?

c. What can you do with the information that you gather from your

research?

4) Is there anything else you think I should know about political science that I

have not asked?

In the interest of time, I looked for background information related to participants' recent

publications, doctoral degree institutions, and specialty areas online before the

interviews. Doing so allowed me to concentrate the interview on those questions most

directly related to my research questions, as can been seen in the above questions.

Pilot Study

The methodological decisions I have made about my dissertation were heavily

influenced by the pilot study I conducted. Before beginning the pilot study, I completed

the IRB process and obtained approval to conduct the study, as well as to audio record

participants with their permission. All of the participants received an IRB-approved

consent form, reviewed it, and signed it, and I explained to each participant that they

could refuse to answer any question or end the interview at any time without consequence (see Appendix D for a full protocol).

The pilot study consisted of two rounds. In the first round, I interviewed the participants about their backgrounds and their thoughts about political science, and then they completed three problem-solving tasks (see Table 6). In the second round, I again met with several of the participants, and they completed eight new problem-solving tasks (see Table 7). The problem-solving tasks I propose to use in the dissertation study are adapted from the 7th and 8th tasks used in the second round of the pilot study.

Table 6

Problem-Solving Tasks for First Round of Pilot Study

Task	Task question	Pros	Cons
1) Research task	Imagine you have been given the freedom and funding to study anything you want in U. S. government and political science. What would you study, why, and how would you go about studying it? What would you do with the results of your study?	Authentic political science question because it is focused on research.	Too broad and lacks context. More like an interview question than a task.
2) Campaign task	Imagine you have been hired as a consultant by a political campaign in the U.S. How would you use your expertise to help make the campaign successful?	This task provides context and information to discuss. It is related to campaigns and electoral behavior, which are topics in political science.	This task is more like politics than political science. It involves attempts to influence behavior rather than explain phenomena.
3) 14th Amendment task	As you may know, some political leaders have called for a reinterpretation of the 14th Amendment due to the number of undocumented immigrants whose children are born in the United States and granted citizenship by birthright. If you were an advisor to a political leader, how might you advise them about the potential political impact of reinterpreting the 14th Amendment? (Amendment available)	This task provides context and gives the interviewee information to think about and discuss. It is related to governing behavior, which is a topic within political science.	This task is more like policy than political science. It involves attempts to set policy and influence outcomes.

Table 7

Problem-Solving Tasks for Second Round of Pilot Study

Task	Task question	Pros	Cons
1) 2010 Elections task	If you were tasked with researching the 2010 mid-term elections, what would you study and how would you go about it? What method(s) would you use and what data would you need?	This task includes research methods and data collection and analysis. It also involves the study of electoral behaviors.	This question provides some context but not a specific research question.
2) Federalism task	If you were researching the nature of federalism as it relates to the interaction between the federal government and state governments, what would you study? What method(s) would you use and what data would you need?	This task includes research methods and data collection and analysis. It also involves the study of institutions and the relationships between them.	This question provides some context but not a specific research question.
3) Interest Groups task	How would you study the impact of interest groups on elections? What method(s) would you use and what data would you need?	This task includes research methods and data collection and analysis. It also involves the study of institutions and electoral behavior.	This question provides some context but not a specific research question.
4) Political Behavior task	How has political behavior been studied in the past? How would you study it?	This task includes research methods. It also involves the study of behavior.	This question provides some context but not a specific research question.
5) Media task	If you were tasked with researching the role of the media in presidential campaigns, what would you study? What method(s) would you use and what data would you need?	This task includes a research question, research methods, and data collection and analysis. It also involves the study of institutions and their influence on elections.	The research question is not specific and does not include specific data that could be collected or analyzed.
6) Past	If you were researching past	This task includes	This question

Elections task	elections, which one would you study? Why? What in particular would you study in regards to that election? How would you go about studying it?	research methods and data collection and analysis. It also involves the study of electoral behavior.	provides some context but not a specific research question.
7) Opposing Parties task	If you were studying the relationship between the executive and legislative branches when each is held by opposing parties, what would you study? What method(s) would you use and what data would you need?	This task includes a research question, research methods, and data collection and analysis. It also involves the study of institutions and their influence on the government and policies.	The research question is not specific and does not include specific data that could be collected or analyzed.
8) Government Shutdown task	Who do voters tend to blame when there is a government shut down, Congress or the president? What would be the political impact of a government shutdown due to disagreements over the federal budget (such as the one during the Clinton administration)? How would you study such a question?	This task includes a research question, research methods, and data collection and analysis. It also involves the study of institutions and their influence on elections.	The example is too specific and may influence how the task is approached and/or how the question is answered.

Each pilot study participant was a student in a doctoral program in political science. Five of the eight participants concentrated on U.S. government, while the other three focused on comparative government. Each participant also had completed at least one year of their doctoral program at the time of their participation in the pilot study, while half of them were at least in their third year of their program.

The purpose of the pilot study was twofold. First, I wanted to determine if it is possible to define political science as distinct from other disciplines and if expertise in the discipline could be captured. Second, I wanted to determine if the interview questions

and problem-solving tasks that I created would be authentic, would allow the experts to demonstrate their disciplinary knowledge, and would help me answer my research questions. To these ends, I used the interview questions and problem-solving tasks in Appendix D (see also Tables 6 & 7 for the problem-solving tasks). I found that the interview questions focused on political science allowed the participants to define the discipline and make distinctions between it and other disciplines and subject matters. In testing out various problem-solving tasks, I learned about the kinds of tasks that are authentic to political science and generative.

In answering questions about political science, every participant referred to the discipline as the study of power either directly or indirectly. For example, Evan (all names are pseudonyms) defined political science as, "The study of power, who has it, and what power looks like in different settings." Likewise, Matt called political science a discipline "concerned with power, how it is used, and how different people and groups obtain it." Nathan referred to political science as the study of "relationships and the dynamics between various parties within those relationships."

Also, all of the participants discussed political science as a science in which researchers ask questions, test hypotheses, and use a variety of research and data analysis methods to draw conclusions and answer their questions. For example, Stephen defined political science as "a scientific study that involves methods like time sequence analysis, statistical analysis, and content analysis to answer questions." Similarly, Pete explained, "When I think of political science, I think of theory and methods and then various forms of methods."

Finally, several of the participants addressed the differences between political science and other disciplines. Specifically, they discussed the difference between the discipline and public policy. Nathan told me, "Political science is theoretical, while policy is more practical." Evan explained that political scientists have a "different perspective on data and evidence than those who work in public policy," while Nick called political science "descriptive" and said "political scientists attempt to understand how power structures work." In his opinion, "public policy is more concerned with how to turn the theoretical into the practical and what happens to the power dynamic once policy is implemented." Other participants also commented on the difference between the discipline and politics. For example, Evan said that political scientists "study what happens on average, but in politics every situation is different. Every candidate and electorate is different." Matt also felt that politics and political science are different because "in academic political science you are trying to understand and answer questions but in politics you are trying to get someone elected and influence policies or electoral outcomes."

Based on the information gathered from these interviews, I was able to develop a better understanding of political science as a discipline distinct from public policy and politics, in which experts research questions about the dynamics of power. They do so through the use of surveys and other data collections methods, while also using statistical and other forms of analysis to answer their questions. This distinction between political science and other disciplines was an important one for me as I attempted to refine the tasks. When creating the second round of pilot study tasks, as well as the dissertation study tasks, I was conscious of participants' definition of political science and the

differences between it and policy, politics, and other fields. I especially paid attention to the ideas that American political science is empirical, research-oriented, and attempts to answer questions of how and why.

I also gathered important information from the think-aloud activity with the problem-solving tasks and my follow-up questions. The participants thought-aloud as they read each problem solving task and then responded to the question in each task. After each task, they also shared their thinking about the task. The participants had concerns about each of the tasks and discussed ways to improve them. For example, several participants commented that the Research task (see Task 1, Table 6) was the most authentic task for political scientists, but it also was a question that could be asked during an interview. They felt it would not contribute new knowledge about how experts actually do their work or use data to answer questions. Dean chuckled as he read the task, saying that it was "something [he and his] classmates had answered several times" in their courses. Pete commented as he thought aloud, "This is a PS 101 question. Like one they ask you on day one." In his reflection after thinking aloud, Dean explained, "I see what I study in this," but he also felt the information could "be gathered in other ways, like in the interview." Evan agreed, saying, "This is very much what we do – describe what you would do, why and how you would do it, and then what we would do with the information." In his opinion, "It is not likely to be helpful with practicing political scientists. They have already thought about it and are at least attempting to study what they want to already." Based on these and other comments, I concluded that my tasks needed to focus on research and attempts to use research methods and data to understand a phenomenon in political science, but with a more sophisticated task.

There was also general agreement among the participants that the Campaign task (see Task 2, Table 6) and 14th Amendment task (see Task 3, Table 6) had elements of political science but also elements of other disciplines. Dean noted as he read the task, "The idea of power and power relationships are central in these." Nathan also commented that these two tasks involved "trying to study social order and groups." Other participants commented on the research and data involved in these tasks as they read them. Ethan told me that he could definitely "bring data into both of these," and Nathan said, "Data exists for these. You would not have to look far in order to answer them."

Still, the participants noted after thinking aloud that the campaign task was too much like politics and the 14th Amendment task was too much like policy, which as is noted above are both focused on influencing political actors and outcomes. When discussing the campaign task, Dean said, "To me, campaigning is not political science. It's a mechanism for a candidate to win an election. It's not related to political science as the other two are." Evan also found the campaign task to be different from political science. He told me, "This is stepping into politics. We try to answer questions, not influence others." Likewise, in the case of the 14th Amendment task, Ethan told me, "It is definitely setting policy, which is related to political science. But they are different." In both cases, the participants felt that more emphasis on theory and research and the use of data would make these tasks better for answering my research questions.

Finally, some of the participants commented on the American government focus of the tasks. Nathan, one of the participants who did not study American government, read the 14th Amendment task and then admitted, "I am embarrassed to say this, but I don't really remember what the amendment is. I have a vague recollection." After

reading the amendment, he explained, "This is a little more difficult since the countries I study are not concerned with this type of problem." Likewise, Nick, in referring to the campaign task, commented that while his focus is more on war and conflict, he "could see a way that war is like a political campaign. In both you are using different strategies to win." These responses and others showed me the importance of familiarity with the topics of the tasks, but also that it might be possible for experts to work through a problem that is close to one that they study.

Based on participants' feedback, I returned to the tasks and developed a second set (see Table 7 or see Appendix D for the full protocol). The goal was to develop tasks that were more research-oriented and would require participants to consider what data they would need and how they might use it. I then asked the participants to complete the new tasks and share their thoughts about them. Five of the original eight participants responded and completed the second set of tasks.

Overall, the participants agreed that these tasks were more authentic and would allow the experts to demonstrate their knowledge and help me answer my questions. Evan commented, "I think these questions are good. They should get the types of research design that political scientists use." Most of them also agreed that the Government Shutdown task (see Task 8, Table 7) was the best because it was specific and contained a problem that an expert could think about and explore with data. Ethan explained, "I think that of all your scenarios, the eighth sounds most like my experience of political science. I think that political scientists like to start with a puzzle, such as the government shutdown, and then build a broader research question to hopefully come up with a new theory." Stephen named specific data and analysis method he would use to

answer this question, saying, "I would study it by conducting a time series analysis on how public opinion has changed on who they blamed for the shutdown." The fact that most of the participants found this task to be the best and that at least one of them was able to identify data and a research method he would use led me to choose this task with just a few minor edits (see Task 2, Table 5 or Appendix B).

Participants felt that the remaining tasks were too broad and needed additional context or were not research questions that an expert might study. This was especially true of the Federalism, Interest Groups, Political Behavior, and Past Elections tasks (i.e., Tasks 2, 3, 4, 6 in Table 7). While working on the Political Behavior task (Task 4, Table 7), Ethan commented, "In so many ways. It's hard to pick just one or two to talk about." Dean commented that the Past Elections task (Task 6, Table 7) was "so broad. There are local, state, and national elections. There are races for the Senate, the House, and many others. Unless I was already interested in a particular one, it would be hard to narrow it down." After completing the tasks, Ethan told me these "questions seem like questions to ask at the beginning of an introductory political science course. They are less sophisticated." Several participants also commented on the lack of variety in the tasks, which could make it difficult for some experts to complete them. Nick, who does not focus on American government, made the comment, "I feel so unintelligent because these questions should be easy but are so outside my expertise" when he got to the Interest Groups task (Task 3, Table 7). Dean also explained his lack of knowledge, saying, "My interest is not in elections, so I would have difficulty with those. It is not that I couldn't develop some response, but it would be less nuanced and more general than if it were a question from my research area." Evan said after completing the think aloud, "Just be

aware, there is a significant division of labor in political science. Respondents may be able to comment a bit about each of these, but they will have their own particular expertise and might only be able to think more deeply on those issues."

Therefore, I developed two tasks that I believed represent two of the major topics within political science (see Table 5 or Appendix B). These tasks represent one question about the institutions of government and one about voter behavior. I chose these elements of political science based on information from the pilot study participants. Stephen commented during the initial interviews, "There are two big fields in American political science. They are institutions and behavior, and each has its own data types and methods." Similarly, Ethan discussed the different areas of focus as "those related to institutions and those dealing with voters and citizens and how they react to different people and policies." Also, both of these tasks focused on two major topics within American political science that are included in the standards documents that I have reviewed. I believed that all of the experts would be familiar with at least one of these topics and would have equivalent opportunities to demonstrate their disciplinary knowledge when completing the tasks. Thus, I was able to compare their responses to the tasks with their areas of expertise within the field of American political science and see if experts' incoming conceptual knowledge made a difference for one's disciplinary knowledge. Additionally, both of these tasks have elements of the struggle for power and reference research and data collection, which the pilot study participants indicated were important aspects of political science.

One dissertation task, the Government Shutdown task (Task 2, Table 5), is nearly identical to the Government Shutdown task from the pilot study (Task 8, Table 7). I made

a few edits in light of a comment from one participant who was unsure which level of government I was referring to and from another participant who thought the reference to the Clinton administration might bias the reader. In response to these comments, I added "federal" to the question and removed the parenthetical reference to the Clinton administration. Additionally, I removed "Congress or the president" from the task in response to concerns from the proposal hearing. Removing the phrase from the task made it more open-ended and did not force participants to make a choice between two options.

In the case of the other dissertation task, the Major Legislation task (Task 1, Table 5), I used the idea from the Opposing Parties task (Task 7, Table 7) and modified it to make it more specific and clear. I chose the Opposing Parties task because it was the only question from the pilot study that dealt with the institutions of government more than elections and voter behavior. As I indicated above, I believed that it was important to have a task related to voter behavior and one related to the institutions of government because the participants would likely focus on one topic or another. However, some of the pilot study participants noted that the Opposing Parties task was too broad and lacked a reference to any specific data that could be collected and analyzed. In the major legislation task, I included possible data in the task and made it more specific by including the reference to major legislation passed by Congress. Also, as was the case with the Government Shutdown task, I modified the question based on feedback from my proposal hearing to make the question more open-ended.

I also added a component in which I presented data to participants after they initially thought about and discussed the task. Doing so allowed me to see how the participants worked with data and use it to draw conclusions, which is part of their

disciplinary knowledge, while avoiding the possibility of initially having the data bias the

experts' thinking based on the data presented. To assist in determining what data would

be most useful, I asked the pilot study participants what type of data they would use with

each task. Many of the participants discussed using polling and election data for the

questions related to elections, campaigns, and voter behavior (e.g., Task 2 & 3, Table 6;

Task 1, 6, & 8, Table 7). As noted above, Stephen said that he would use a time series

analysis to determine "how public opinion has changed" when discussing the

Government Shutdown task (Task 8, Table 7). In order to determine the change in public

opinion, he explained he would need polling data on whom the public blamed for a

government shutdown. Some of the participants also cited media stories as possible

sources of data, especially when discussing the Media, Past elections, Opposing Parties,

and Government Shutdown tasks (Tasks 5, 6, 7, and 8 in Table 7, respectively). Finally,

Evan offered the advice of using "legislative successes or failures" as data for the

Opposing Parties task (Task 7, Table 7), while Pete thought that federal regulations

directed at the states would be appropriate for the Federalism task (Task 2, Table 7).

Based on the information from the pilot study participants, I decided to include

several pieces of data (see Appendix C for complete information). For example, for the

Major Legislation task (Task 1, Table 5) I provided information to participants regarding

which party controlled Congress during the presidencies of Bill Clinton and George W.

Bush. Also, I provided information regarding major legislation that was under

consideration at the time, the president's position on the legislation, and Congress'

actions on those proposals. I chose these presidents because they both had times during

their presidencies when the majority in Congress was from the same party and times

when the majority was from the opposing party. I also thought that it might be easier to find information about their legislative agendas and successes or failures due to the fact that they are the most recent presidents who have completed a term.

For the Government Shutdown task (Task 2, Table 5), I included polling data and a media story about the shutdowns during the Clinton administration and the potential for a shutdown in 2011. I chose this shutdown and potential shutdown because they are relatively recent events and data for them was readily available to me.

Another important aspect of the pilot study was what participants did and said while they were thinking aloud. As I analyzed the transcripts of the think-alouds, I noticed a few patterns. For example, all of the participants read and then reread the prompt before commenting on it or attempting to solve it. Many of them also commented on their conceptual knowledge (or lack thereof) related to the task, which was especially true for those who did not focus on American government, and many attempted to place the topic into a familiar context. When commenting on the 14th Amendment task (Task 3, Table 6), Nathan explained that he did not "quite remember what the amendment says," which impaired his ability to comment further until he read it. Similarly, Dean commented that he really was "not an elections expert," so he did not know how much advice he could give a candidate (referring to the Campaign task, Task 2, Table 6). In some cases, participants even reframed the task to something more familiar. Nathan did this with the 14th Amendment task (Task 3, Table 6) when he applied the idea of birthright citizenship to other countries and thought about how they deal with the issue of citizenship.

In many cases, the participants also referred to the data they would use without prompting from me. For example, when discussing the Research task (Task 1, Table 6), most of the participants included the type of data they would use in their own research. Evan discussed researching state governments and included state laws concerning sale and distribution of alcohol as something that interested him. Other participants referred to polling data as they thought about the Campaign task (Task 2, Table 6) and the Government Shutdown task (Task 8, Table 7). Several of them also offered specific research methods (such as polling and time series analysis) when discussing the government shutdown task.

Overall, I found that participants' conceptual knowledge was important, but it did not appear to impede their ability to complete the task. They admitted their lack of knowledge, sought more information, and/or adjusted the task to reflect the same idea but in a context more familiar. Additionally, participants appeared to think about the tasks in terms of research methods and data collection, especially the tasks that were less practical and more empirical (e.g., Task 1, Table 6 and Task 8, Table 7). In the dissertation study, I attempted to confirm these patterns and investigate other possible patterns by paying attention to the kinds of questions experts ask, what they attend to in the task, the knowledge they draw on in considering the task, and the ways in which they work with data. Having a limited number of tasks that are representative of political scientists' work and an open-ended task combined with an opportunity to look at data relevant to the task gave me the opportunity to study patterns in experts' responses.

Data Analysis

During and after the data collection process, I completed multiple rounds of analysis. I reviewed the data from the concept sorting and mapping tasks, problem-solving tasks, and interviews several times, while making reflective and analytic notes and writing memos (Bogdan & Biklen, 2007; Miles & Huberman, 1994) (see Table 8). These notes and memos allowed me to track my initial analyses about the nature of participants' expertise. Specifically, I wrote a memo immediately following each interview and task completion session in order to note any initial thoughts or impressions. I also wrote weekly memos that built upon my initial impressions and contained thoughts about the similarities and differences among experts, among students, and between experts and students. These weekly memos helped me keep track of my ideas as they developed (Bogdan & Biklen, 2007; Miles & Huberman, 1994).

Additionally, I transcribed the audio recordings of each interview and task completion session and then analyzed each case individually (Bogdan & Biklen, 2007). In this analysis, I identified patterns, such as how participants questioned, approached, thought about, and attempted to solve the problems, and how they used data to solve the problems. I coded the data for each case based on these patterns and created data displays indicating which of the experts demonstrated which of the codes (Corbin & Strauss, 2008; Miles & Huberman, 1994). Originally, I coded the data based on aspects of disciplinary knowledge in history (e.g., evidence, context, sourcing, cause and effect, continuity and change, corroboration, and perspective), but I soon abandoned many of these codes because they were not evident in the data. I then began to code the data again using open coding through a grounded theory approach (Corbin & Strauss, 2008). Then, I

tested my propositions by reviewing the data in order to determine if I needed to revise, add to, or delete any of the codes, and I looked for any disconfirming evidence.

When analyzing the card sorting and mapping data, I chose not to use a quantitative scoring scheme like the one developed by Novak and Gowin (1984) due to the differences that existed between the various sorts and maps. Specifically, the fact that three of the students and two of the experts sorted the concepts into piles rather than into a hierarchy or word web made it difficult to score all of the sorts and maps using a scheme developed specifically for hierarchies. Additionally, I did not specify that participants needed to create a hierarchy or word web, and therefore could not penalize participants who had created piles, which the Novak and Gowin scoring scheme would have done. I also chose not to score the sorts and maps using qualitative methods as described by Miller and his colleagues (2009) because I did not have a preconceived ideal or preferred map against which to compare the ones created by my participants. Furthermore, I provided the concepts for participants to use, and almost all of the participants used all of the words in their sorts and maps (see Chapters 4 and 5 for specific details about which participants did not use all of the words). However, both quantitative and qualitative scoring methods take into account what concepts participants choose to include in their concept maps. Since there was little difference between participants in terms of which concepts they used and because they did not created the maps from scratch, but rather from a pre-determined set of words and concepts, I did not feel it was appropriate to score the sorts and maps based on previous scoring schemes. Instead, I looked at the sorts and maps of each group (experts and students) and noted patterns and differences between the two groups, but I did not attempt to score the

differences within each group. The resulting conclusions about the differences in expertise between the experts and the students were based on aspects of previously used scoring methods (e.g., the structure and links), but I did not specifically quantify each map.

Finally, I conducted a cross-case comparison in order to determine which codes applied to multiple cases and if there were any missing codes. I created additional data displays describing how each expert approached the concept sorting and mapping task and problem-solving tasks and how they responded to the interview question about the definition of political science. Again, I looked for evidence that challenged my codes. The collective goal of these techniques was be to compare participants' responses to the interview questions and tasks and what they did in order to come to their conclusions. Again, the comparisons were across experts, across students, and across students and experts in order to determine what, if any, similarities exist in how they solved the problems. Together all of the above analyses provided me with insight into the nature of political scientists' expertise.

Table 8

Data Analysis Methods

Data collection	Data analysis
Concept sorting and mapping task	Memo of initial impressions and thoughts. Transcription of audio recording. Identify patterns in the way that participants organize words. Test propositions. Compare experts and students.
Problem solving tasks	Memo of initial impressions and thoughts. Transcription of audio recording. Identify patterns and code data. Test propositions. Compare experts and students.
Interview	Memo of initial impressions and thoughts. Transcription of audio recording. Identify patterns and code data. Test propositions. Compare experts and students.
	Write weekly memos for each data collection method to keep track of ideas and how they develop. Data displays of tasks and definition of political science.

Chapter Four: Findings from Experts

Dimensions of Expertise

During their participation in a concept sorting and mapping task, two problem-solving tasks, and interview questions, the experts demonstrated several dimensions of their expertise. The interview was helpful for discovering the experts' disciplinary beliefs. It allowed the experts to talk about their epistemic beliefs about knowledge in political science, especially the fact that political science knowledge comes from the scientific study of phenomena related to the government, power, and the allocation of resources. The concept sorting and mapping task allowed the experts to demonstrate how they organize the discipline, while the experts revealed some of the knowledge and skills they use in their work while performing the problem-solving tasks. The knowledge and skills they used as they completed the tasks allowed them to solve, or not solve, the problems that were presented to them and to discuss how the documents did or did not help them.

Disciplinary Beliefs: The Interview

During the interview, I specifically asked the participants how they would define political science. Although they each answered in their own way, their responses focused on three key aspects of the discipline: an emphasis on the phenomena studied, the use of a variety of research methods to study those phenomena, and the standards of practice in place in the discipline. The experts also explained what the discipline is not, particularly politics and journalism.

Phenomena studied. In terms of the phenomena studied, nine of the experts mentioned government, seven discussed the concept of power, and five referenced the

distribution of resources in their definitions of political science. For example, E1 told me, "What unifies the discipline is an interest in politics, which is about control of governing institutions. It's about control of government and control of public policy." E9 made similar comments but emphasized the importance of the actors within government in her definition. She explained, "I think it's a study of human behavior within...the realm of how we run our government… It's the study of human behavior and how humans interact with one another within the realm of government settings." E4 agreed that government and power were critical to the definition of political science, but she also explicitly noted the importance of the distribution of resources, saying,

> I think one of the fundamental questions that underlies all political science is a question of power. Very little of what we study has nothing to do with power. I think that is critical to the product, because politics is figuring how resources are divided, who has control, who has a say. Those issues all revolve around power.

All ten of the experts directly referenced at least one of these three aspects of political science: government, power, and distribution of resources. None of them explicitly said that any of these concepts were not part of the definition of political science, and none of them included other major concepts in their definitions. Taken together, it became clear that these experts viewed political science as a discipline focused on the government, power, and/or the distribution of resources.

Research methods. Six experts also noted that there was not a research method specific to the discipline of political science. Instead, the methods that they use to research the discipline come from other sciences, in particular the social sciences. E8 noted the lack of a single research method when he explained, "Others have called it the

borrowing discipline. We don't have our own methodology. I can't think of a method that's been invented by political scientists for political science."

E3 explicitly referred to some of the different sciences from which political science has borrowed, saying,

> We have taken approaches in psychology, economics, physics, computer science and have applied those methods to people. Other people study organisms and stuff. We study people and behavior and institutions. We use those same fundamental methodological principles that other disciplines use.

The other four experts did not disagree with this assertion that the discipline borrowed its research methods from other disciplines, but they also did not directly address this aspect of the discipline. The unifying aspect of the discipline of political science, according to these experts, was the fact that political science did not have its own research method and therefore used research methods developed in other disciplines.

Another common theme in the experts' comments during the interview, related to the question of research methods, was the idea that political science is a science. It is a science because political scientists attempt to formulate general understandings and theories about government, power, and the allocation of resources; follow the scientific method to develop those understandings and theories; and require the collection of data to be used as evidence. Eight of the experts talked about being able to develop general theories and understandings in the discipline, while all ten of the experts mentioned the scientific method, and nine discussed the need for data and evidence.

E2 explained the goal of the discipline, "The immediate goal (of political science) is to get a better understanding of why things work the way that they do." E8 made similar comments about the attempt to understand in the discipline. He explained,

> What makes it a science is a broad commitment to the idea of uncovering understandings and even, I wouldn't go as far as laws but almost, about human behavior in the realm of politics. A commitment to doing that in a systematic way.

According to the participants, that systematic way of uncovering understandings is the scientific method and the development of hypotheses that can be confirmed or falsified. E8 referred to the scientific method and its importance for the discipline, saying, "What makes it a science is the commitment to the general idea of the scientific method. The idea of trying to study something apart from it, develop hypotheses, but be open to them being wrong." E4 agreed that political science is dependent on the scientific method and explained each step in the method. She told me,

> You start with identifying the problem and then consult the literature to figure out what the theory is and what the methods are. That helps you shape your plan of attack. What are the questions, looking at that problem, what are the questions that you want to ask and test? What are your hypotheses and how are you going to set about testing those hypotheses? Devising a research scheme to test your questions and then looking at implementing whatever research design you have. Implementing it and then using what you find out to publish your results whether you find support for your hypotheses or not.

Thus, in order to understand the discipline and develop general theories about how the government functions, who has power and how it is used, and how the allocation

of resources impacts and is impacted by these aspects of the government, these experts rely on the scientific method. That method allows them to study phenomena and draw conclusions about it, provided they have data and evidence to support their conclusions.

For these experts, another important aspect of the scientific method, and political science, was the need to collect data and provide evidence for the conclusions that political scientists draw from their research. Nine of the ten experts referred to the need for data and/or evidence. According to E8, the collection of data and evidence is what makes him a scientist. He explained,

> One of the tricks in social science is we have to test the obvious. We can't just assume the obvious is true. I tell my undergrads you can't just tell me the sky is blue. I need some citation. I need some evidence.

E10 also emphasized the need for evidence in his explanation of the scientific nature of the discipline. He told me,

> Having a good bit of evidence for exactly why something is, explaining why something works the way it does. That's the science of it. You can talk about broader scientific applications and all that stuff. It means rigor, clear assumptions, testing something, setting up a hypothesis, testing it with a model or data.

Additionally, E2 referenced the importance of data and evidence when he said that political scientists must "rely not just on conventional wisdom, not just on knee-jerk partisan interpretation of things going on, but to be able to have a real evidenced-based understanding of why things work the way they do." E7 agreed that data was important and related it directly to the process of forming and testing hypotheses, saying, "You need to write down the hypothesis, step back and say this is what I would need in order to

say there is support for it and this is what I would need to say this had failed…" Finally,

E5, a qualitative researcher, agreed with the other experts that data and evidence are

necessary in political science. He told me,

> To me science is not necessarily about numbers. It's about data. There is a magnet
>
> on this file cabinet that matches the sign that is on my door and the coffee mug
>
> that I have had made. It is an illustration of the aphorism "In God we trust,
>
> everyone else must bring data." I have to remind my students that I am a scientist.
>
> I do style myself as a scientist because I ask questions and then I gather data to
>
> answer them.

In the end, the purpose for following the scientific method and collecting data and

evidence for these experts was the development of general understandings and theories

about the government, power, and the distribution of resources.

Standards of practice. The experts I interviewed also made it clear that their

peers would judge their work and the theories that developed from it based on the quality

of their research, which was judged based on the topic(s) studied, the research method(s)

used, and the contribution(s) made to the discipline.

Five of the experts referenced the quality of the research as an important aspect of

the discipline, noting that certain topics, problems, and questions are worth studying in

political science while others are not. For example, E4 made the case for only studying

problems and questions that other political scientists would find important or interesting.

She stated,

> It would be really futile to work on a question that is not important… There are so
>
> few of us who are in this enterprise. In any one person's lifetime you could never

hope to really get closer to any of these questions just as collectively in anyone's

lifetime we probably won't. At least when we are collaborating, even without

actually working together but through publication of work, it becomes an

enterprise.

In order to gain knowledge and move the discipline toward a better understanding of

government, power, and the distribution of resources, political scientists need to build

upon the research of others. If every political scientist chose to look at different questions

and problems, then the discipline could not move forward.

Two of the experts also referred to the fact that the research method used to study

a problem or question was an important determination of the quality of the research

study. Studies that use quantitative research methods are more often published in

scholarly journals and therefore may be considered more significant for the discipline. E8

told me, "I also think we have become more narrow in our major journals with a lot of

focus on the quantitative." In his opinion, the editorial choices about what to publish

determine what is considered important in the discipline, and the current preference

appears to be for work that involves quantitative methods of data collection and analysis.

He continued, "It doesn't mean that qualitative work isn't published. It certainly is. There

are pressures to eliminate that at times…. I tend to believe that we ought to be open to

multiple methods of approaches." E4 also discussed how judgments about research

methods were part of the check on the quality of research by other experts. She

explained,

An important part of the process is then submitting your work to your peers, to

other people studying similar questions, having them vet your work and look at

them critically, and making sure your methods are right, the questions are right,

the theory is accurately developed and then sharing that with others so that

becomes part of the literature.

Finally, the quality of the research was also judged based on the potential of the

research study to make a unique contribution to knowledge in the discipline, whether

because a researcher studied a question using a different research method than in the past

or because the researcher developed a new theory as a result of the research study. E8

explained this idea when he said of the Major Legislation task, "I think in the terms of the

process, it's trying to understand what's already out there, where are the holes in what we

already know, and how we might be able to extend that knowledge."

Thus, according to these experts, there exist within the discipline some standards

of practice that help determine what type of knowledge is important and the best methods

for gaining that knowledge. For some of these experts, the quality of their research was

determined by the question asked or phenomenon studied, the research method used for

studying and analyzing the problem, and the contribution to the discipline that the

research study made.

What political science is not. Three of the experts made a point to explain what

political science is not. One expert noted the difference between political science and

politics, while three experts noted the difference between political science and

journalism. In each of these cases, the experts agreed that the key difference is the

emphasis on the scientific method and/or the requirement for evidence. E7 explained the

difference between political science and politics by saying,

I think [political science] is often the study of real world politics, but also sometimes the study of things that run deeper in terms of the causal change of what makes somebody think and act the way they do. Sometimes there aren't direct policy or politics connections. I think that in that sense it can be quite broad… What's right about the system? What's wrong about the system? Why did we get this outcome? What are the implications for this outcome? Part of that is developing the tools so that you can study that.

Thus, although political science includes the study of politics, it is distinct and involves much more than considerations of policy outcomes or political impacts. Political science attempts to understand the system in which politics and policy play out, why the outcomes are what they are, and what it means.

E7 also made the case for the difference between political science and journalism. He told me,

You distinguish some of this from journalism. A journalism major might be fine just going and getting one person off the street. They have a compelling story and that's interesting. That's not evidence for a wider phenomenon. It's one data point for us, whereas it might be the thing that gets the prize for them. That's important, but that's not political science.

E10 also specifically discussed the difference between political science and other pursuits in terms of the need for evidence and the complicated nature of the discipline. He told me,

To me, political science is making systematic arguments about why political outcomes happen the way they do as opposed to just journalistic interpretations

and always having good evidence for that. Political scientists are often at odds with journalists because they just make broad, sweeping statements about the way politics works. The realities, of course, are far more complicated.

E9 agreed with E7 and E10, but she also explicitly cited the scientific method and the retrospective nature of the discipline. She explained,

We are much more interested in looking at it retrospectively because that involves collecting data over time and the more data we get the better because we are able to analyze the problem over time. It's studying this human behavior within government settings retrospectively and being able to draw conclusions about what that tells us about that behavior and what makes people do what they do and how they interact. I think that's where the science comes in and we are able to apply scientific techniques and scientific methods, theories, hypotheses, all of this to human behavior doing so predominantly retrospectively.

In her opinion, journalism is far more interested in "the current political climate and concerned with the immediate consequences of a policy decision."

Thus, three of the experts described the discipline by discussing what it is not, specifically politics and journalism. In doing so, they re-emphasized the scientific and academic nature of the discipline, while also making a case for political science as a discipline distinct from other pursuits. These experts saw themselves as scientists who follow specific guidelines (i.e., the scientific method) in order to collect evidence to support theories about government, power, and the distribution of resources.

Summary of disciplinary beliefs. Based on the comments made by the experts during the interview, political science is an inquiry-based study of human behavior and

institutions related to the government, the exercise and distribution of power, and the allocation of resources. It is a discipline unified by the phenomena studied, rather than by a specific research methodology, and while there are no certainties in the discipline, there are theories that explain phenomena related to the government and power. Knowledge in the discipline comes from studying questions and problems of power and the allocation of resources as they relate to the government, governmental actors, and governmental institutions. These questions and problems are studied in a systematic way through the use of the scientific method and shared with other experts through the publication of results in professional journals. Other experts can then replicate the studies and either confirm or refute the findings. In this way, knowledge about government and political science is advanced in an empirical and systematic way, while politics and journalism lie outside the discipline because of their lack of scientific inquiry.

Organizing Knowledge: The Concept Sorting and Mapping Task

The concept sorting and mapping task allowed the experts to demonstrate their conceptual knowledge, particularly how they organize their knowledge. While none of the experts sorted the cards in exactly the same way, certain patterns did emerge. Four major aspects of the experts' thinking about the discipline and the way they organize their knowledge of it became clear during the concept sorting and mapping task. First, all of the experts created a structure with the cards that represented their thinking about the discipline and the words on the cards. Second, the experts created general categories within their structures, into which most of the words fit. Third, they commented on the complexity of the discipline due to the relationships that exist between many of the concepts (see Table 8 for a complete list of experts and the structures, categories, and

connecting words that they used in their concept sorts and maps and Appendix D for

images of the sorts and maps). Finally, many of the experts also acknowledged some

uncertainty with the way they completed the concept sorting and mapping task.

Table 9

Patterns in the Concept Sorts and Maps of Experts

Expert	Structure	Categories	Connecting Words
E1	Hierarchy	Institution Election/Direct democracy Ideology Public Policy	Representation Political Party Mass Media (between Institution & Election)
E2	Word Web	Institution Election	Representation
E3	Hierarchy	Politics Public Policy Election	Mass media Public Opinion Ideology (between Public Policy & Election)
E4	Hierarchy	Politics Direct Democracy Federalism/Institution Election Partisan Public Policy	Political Party (between Institution & Election)
E5	Piles	Election Participation Political Party Ideology Institution Miscellaneous	None
E6	Word Web with Hierarchy in parts	Institution Election Public opinion	Representation Federalism (between Institution & Election)
E7	Piles with Hierarchy within some piles	Politics Representation/Election Public Policy Institution Mass Media Federalism	Ideology (between Election & Public Policy)
E8	Hierarchy	Institution	Representation (between

		Election Public opinion Ideology Politics	Institution & Election)
E9	Piles	Mass Media & Public Opinion Election Political Party Ideology Federalism/Institution	None
E10	Hierarchy	Institution Behavior	Political party Direct Democracy, Mass Media Representation

Structures. There were three distinct structures used by the experts to organize

the cards: hierarchy, piles, and a word web (see Figures 2, 3, and 4, respectively for an

example of each). Some of the experts, however, combined two of the structures. Five of

the experts (E1, E3, E4, E8, E10) created a hierarchy when sorting the cards. E6 made a

word web, but included hierarchies within some parts of the web. E7 made piles with the

cards but also indicated some hierarchy within some of the piles. E5, E9, and E2 were the

only experts to create a structure with the cards that did not include a hierarchy. E5 and

E9 made piles with the cards, while E2 made a word web with piles.

With extensive knowledge about a discipline, experts tend to organize this

knowledge around big ideas and core concepts so that they can more easily retrieve

information and see relationships when engaging in the work of their discipline. Each of

the structures used by these experts - hierarchy, word web, and piles - demonstrated how

the experts understood the relationships between the facts and concepts represented on

the cards and in the discipline in general. By creating these structures, the experts

produced a physical and visual representation of their knowledge and understanding of

the discipline. In each case, the experts demonstrated that specific words or concepts help to organize the discipline into broad categories, which can then be divided into more specific and/or subordinate topics. Thus, the discipline has an order and a structure to it, albeit an intricate one with many connections and complexities.

In a hierarchy (Figure 2), the words and concepts are arranged in one of two ways: more general concepts are at the top and serve as categories into which other concepts are placed and more specific concepts are farther down the hierarchy, or concepts that are subordinate to others are farther down the hierarchy. The relationships between the concepts are visible in the way in which the structure is constructed. Similarly, in word webs (Figure 3) relationships between words and concepts are evident in the structure, but they are arranged differently than in hierarchies. The main concept or word is at the center of the word web, while the concepts that are connected or subordinate to it are placed around the central word. Finally, relationships between words and concepts are less explicit in piles (Figure 4), although they may still be implied. For example, the words or concepts in a given pile may have something in common but the order of the words does not necessarily imply any specific order or relationship. On the other hand, a pile could be arranged so that the organizing or unifying word or concept is on the top of the pile (serving as a category) and all of the other words below it are subordinate to it or related it in some other way. In all three cases, however, the structure can be used to demonstrate the relationships that exist between and among the words and concepts.

Figure 2. Hierarchy created by E10.

Figure 3. Word web created by E2.

Figure 4. Piles created by E5.

Organizing categories. In addition to providing a structure to the discipline through the concept sorting and mapping task, the experts used the same words, specifically "election/behavior" and "institution," to indicate major categories within the discipline. Categories were words used regularly either at the top of the hierarchies, as the top word in a pile, or at the center of a word web. In this way, words and concepts could also serve as categories that served to organize the other words or concepts. All ten experts used "election" or indicated they would have used the same idea but a different word (E10 replaced "election" with "behavior") as one of the major categories, while nine of the experts used "institution" to indicate another major category. Only E3 did not use "institution," and he indicated that was because his area of interest is in behavior, not institutions. He was also the only expert who did not use most of the words in the card sort (E3 only used 15 out of 26 words, E10 used all but two of the words, and E9 and E4 used all but one word each).

As they thought aloud, the experts explained that they used these general categories because they correspond to the major divisions within the field. American political scientists often conduct research and have expertise in either behavior or

institutions. E6, discussing major categories he used to organize the cards, told me, "In general the main divide is between people who do institutions and people who do behavior. Institutions is how does Congress work, how does the presidency work, courts, bureaucracy, stuff like that. Behavior is public opinion, voting, and elections." E10 also pointed out that American political science is divided into these two major categories, saying, "So the first big sorting in political science is institutions versus behavior." Thus, these experts' organization of the cards into the major categories of "election/behavior" and "institution" was a reflection of their training in the discipline and the division between those who study institutions and those who study behavior.

However, eight of the experts also used additional categories to organize the cards. For E2 and E10, "institution" and "election/behavior" were the only major categories; for both of them, all of the other words fell within these two categories or served to link them. The remaining experts used a few other words as major categories, including "public opinion," "public policy," "ideology," and "politics." Four experts each used at least one of those words as major categories. For example, in addition to "institution" and "election," E1 added "public policy" as an additional category. She explained,

> I would group the study of political science with respect to American politics into these headings. So electoral politics, which would have to do with elections as well as direct democracy procedures and then all the concepts relevant to that are areas of study that would fit into there. Campaigns, public opinion, incumbents versus challengers, and participation. Then there is the study of institutions; also

the study of public policy. I would group those as separate though obviously how

institutions work affects public policy.

In light of what the experts said about their definition of political science and how it is

distinguished from politics (see *Disciplinary Beliefs* discussion above), it makes sense

that public policy and politics would fall outside the categories of institutions and

elections/behavior. If political science is different from, but related to, public policy and

politics, then they would not be part of the larger study of institutions and elections and

behavior, although they would not be removed completely from the discussion.

Complexity and relationships. The experts also discussed the complexity of the

discipline and the relationships that exist between the various topics in political science.

As they completed the concept sorting and mapping task, the experts noted the

relationships using the words on the cards and connecting them to other words within the

concept sorting and mapping task. They also acknowledged the complexity of the

discipline and the fact that other ways of organizing the discipline and other connections

between concepts in the discipline were possible. In both cases, they verbalized the

relationships that were implicitly or explicitly embodied in their visual representations.

Eight of the experts used at least one word from the set of cards to connect two or

more categories. "Representation" was the most frequently used word to connect

categories, as five experts used it (E1, E2, E6, E8, E10). In all five cases, the experts used

it to connect "institution" to "election/behavior." For example, E7 had difficulty placing

"representation" and ultimately used it as a connector. He said,

Representation … this is tricky. I think this is a bridge because elections, we can

think about representation in a couple of ways. Are the people represented in the

electorate? Are the people who get elected good representatives? Are the

committees representative of the country as a whole, of the party?

E6, who also used "representation" to link topics, told me, "Representation feels like it

needs to be a link." Finally, E10 explained, "Representation falls a little in between these

two (institution and election)."

Four experts (E1, E4, E8, E10) used "political party" to connect "institution" and

"election." For example, E8, talking about "political party," said, "In some ways this is

the linker. Political party links both elections and legislative." E10 agreed, saying,

"Political party shows up in elections but it also shows up in institutions literature. They

connect the people in institutions often times through elections." Additionally, three

experts used "mass media" as a connector. E1 and E10 used "mass media" to connect

"institution" and "election," while E3 used it to link "public policy" and "election."

Discussing her use of "mass media" as a connector, E1 told me, "Mass media is sort of

similar in that obviously electoral politics try to manipulate mass media to try to

influence public opinion. Mass media are also a political institution in their own right."

Another pattern that emerged during the concept sorting and mapping task was

the complexity of the discipline and experts' uncertainty about how to sort the cards.

Eight of the experts expressed some doubt about the way they organized the cards and

indicated that they or other political scientists might organize them differently. For

example, when discussing where to place decision-making, E1 said, "Maybe if I would

reorganize again I would put ideology next to public policy next to institutions and keep

[decision-making] somewhat separate." E6 also indicated that there could be other ways

to organize the cards when he said, "Of course all this party stuff would fit very well here

(pointing to institutions), but [election] is the first thing I saw, so that was the natural place to put that." Meanwhile, E9 found the task both more flexible and difficult. She explained,

> I mean [public opinion and mass media] could sort of fit into [election] now that I think about it. I could put it in here and not feel too bad about it, but [election] was more specific about actually getting people elected. You could really make the argument about the fact that public opinion and mass media matter for elections, but this was more specific about the process of elections so I left it out in its own category. I could easily have put it in if I wanted to.

Similarly, many of the experts expressed difficulty due to the fact that all the words are related in the discipline. E2 found the task especially difficult, and while he ended up sorting the words into piles, there were only two piles, "institution" and "election," with "representation" connecting the two. He placed almost all of the words in the election pile. As he sorted, he explained, "I'm having trouble representing the overlap between participation, mobilization, and institutions over here. I'm making a giant pile here representing that. It is a mess." When he finished, he said, "It turned out to be a mess. Everything is interconnected."

Likewise, E8 had difficulty with the task. As he sorted, he commented, "There are clearly links between these. I don't know I have that organized in any kind of logical way." He did not share what those links were, just that there were links. When he finished, I asked if there were any words missing. He replied,

> No. Outside of the cards, what I would want would be lines that I could actually draw connections. I tend to think that way. It's easy enough in terms of grouping

the cards, but ultimately thinking about connections is an important part of what I

do.

Again, he did not explain what those connections would be or which cards he would

connect. He commented that it would help to have the connections but needed to think

more about where those connections would go.

In each of these cases and others, the experts struggled to come up with the best

way to organize the cards, ultimately creating an organization but acknowledging that

other organizations could also be correct. In fact, E4 noted that the traditional

organization into the categories of institutions and behavior might conceal the

relationships between different concepts in the discipline. She explained,

> You see a lot of [textbook] authors trying to break that mode and organize things
>
> in a way that might not be so this is what institutions are. It under-emphasizes the
>
> inter-relationships, so you see people trying to do more of a problem-based
>
> approach or a more pathways to democracy approach.

In a problem-based approach and a pathways to democracy approach, she explained,

several of the concepts represented on the cards could be presented together, requiring

students to use knowledge about both institutions and behavior to solve problems.

Overall, for the experts I interviewed, including E4, the discipline is organized

into institutions and behavior, although there is much more to their knowledge and

thinking about the discipline. They clearly see connections between the two major

categories of institutions and behavior, as well as other relationships between concepts in

the discipline, although they were not specific about what those relationships might be.

Summary of the concept sorting and mapping task. Overall, it became clear from the concept sorting and mapping task that the political scientists who participated in the study had a structure for organizing the discipline that emphasized the relationships between the words and concepts. Additionally, they thought of the discipline in terms of institutions and elections/behavior. These were the major categories into which almost all of the other words and concepts fell, and in the cases when words fell outside these categories, it was most often because those words linked the two categories. Those categories, at the very least, include institutions and elections/behavior, and may include public opinion, public policy, ideology, and politics. Those categories are then connected by concepts like representation, political parties, and mass media. Additionally, the organization of their knowledge is complicated by the fact that the words and concepts are related and cannot easily be placed into simple structures or categories, resulting in several possible configurations of the words and concepts. For experts, the cards represented complex ideas that are connected to other ideas that are not discrete pieces of knowledge or information.

Engaging in the Discipline: The Problem-Solving Tasks

The problem-solving tasks allowed the experts to demonstrate additional aspects of their disciplinary knowledge, specifically the concepts and ways of thinking the experts use when engaging in the discipline. These concepts and ways of thinking included evidence, context, causation and correlation, sourcing (Wineburg, 1991), sub-problems, definitional precision, and uncertainty.

Evidence. Nine of the experts referred to the importance of evidence (cf., Lee, 2005), while eight cited specific types of evidence that would be needed to support

answers to the questions in the problem-solving tasks. In particular, four of the experts suggested broad types of evidence, such as counts of legislation, voting records of members of Congress, and polling data, that could be helpful for answering the questions but might not provide a complete or accurate picture of the solutions to the problem-solving tasks. Five experts suggested other types of specific evidence that would help answer the questions, of which three involved the experts collecting their own data. These suggestions included tracking important legislation (using specific parameters to define "important"), using item-response models to analyze members' voting patterns, designing an experiment, and conducting an open-ended survey.

Counting legislation and polling. While discussing both the Major Legislation and Government Shutdown tasks, four of the experts offered some types of data that could provide insight into the questions asked. For example, in the case of the Major Legislation task, one type of evidence that could be helpful would be counts of the voting behavior of members of Congress. E8 offered this type of evidence when he said, "As a quantitative person I would be looking at what kinds of data, what kinds of numerical data I could collect for a question like this." When asked what that numerical data might be, he offered "counts of legislation." Similarly, E2 noted that he would need to look at the voting record of members of Congress. He said, "I would want to look at some basic evidence of what each member's essential tendency in each party and each chamber was and how they are voting." The evidence would be "their voting behavior."

The experts offered similar ideas when discussing the Government Shutdown task. They suggested public opinion polling and survey data most often as the best evidence of whom voters blamed. E8 told me, "Because I'm a pollster, quantitative-

oriented, I would certainly immediately start looking for existing polling data, public opinion data to be more precise, on perceptions of who does what in government, who's responsible for what." Discussing the same question, E5 said, "If we're talking about voter reaction, I think the first question there was is there a way to answer it without stats and polling data." E4 also explained that polling data would be critical for understanding whom voters blamed for a government shutdown. She said, "You're going to need to do some kind of survey research or conduct a poll… The only way really to get at what's really happening here is to do public opinion polling."

In these instances, the experts referred to specific types of evidence that they would collect in order to help answer the questions posed in the problem-solving tasks. They recognized that evidence would be needed to support any conclusions they made and answers they provided, which is required by the scientific method. Their responses to the tasks reinforced their explanation that the discipline is in fact a science because it requires the collection of data and evidence. However, other experts noted that there would need to be additional restrictions on the type of data collected and additional data analysis methods to capture the appropriate evidence to answer the question completely.

Other types of evidence. While the types of evidence offered by the experts above could provide some insight into the problems presented in the tasks, there were also other types of evidence and data analysis methods that some of the experts felt would more specifically respond to the questions.

In the case of the Major Legislation task, counting every piece of legislation and how every member of Congress voted would not only take an incredible amount of time and energy, but it would also skew the results when determining the impact of party on

the passage of legislation. E1 explained that "Because there is so much routine legislation or unimportant and symbolic legislation you want some kind of filter that helps you isolate the really significant stuff the government is working on." For her, researchers would need to "Get some sense of important bills, bills to watch, rather than the total number of laws where you pick up all the naming of post offices and that sort of thing…" Including every roll call vote in a dataset could negatively influence the results of the study and the conclusions drawn from them since many times the president does not take a position on legislation or there is bipartisan support for things like naming a post office or honoring a citizen. E6 agreed that political scientists would need to limit the cases to those most directly related to the problem. He offered the item-response model as a way to do that. He explained,

> Item-response models…measure whether they are Republican or Democratic or liberal or conservative. Then you estimate those ideal points and from that you can say I am only going to look at cases where there appears to be party pressure and see if that changes things.

By using item-response models, the researcher could limit the number of cases to only those in which party pressure appears to have an impact. Like E1, E6 was concerned with both limiting the amount of data being analyzed and ensuring that the data that is analyzed will be related to the question asked.

When discussing the Government Shutdown task, experts also noted the limitations of only using polling or survey data to answer the question. E6 explained the problem with relying on just polling or surveys, saying,

We can look at polls and ask people what they say. That is one thing that is

interesting, but it's not the whole story. It's definitely not the whole story because

later there is an election and maybe these things carry over in a different way.

Three experts believed that an experiment would be a better method to gather evidence

about voter blame for a government shutdown. One such expert was E8, who said, "Some

people might take a story like in [Document L, *The Washington Times* News Story] and

mock it up and do an experiment and see if it will cause people's opinions to move on

questions like the polls that we have looked at here." Offering a little more detail about a

potential experiment, E10 explained,

I would start with some lab experiments. I would design a set of stimuli that

would look like news reports… You want to give people two articles, one that

faults the president and one that faults the Congress, and then see how their

responses change given some would be randomly exposed to one versus the other.

Similarly, E7 suggested a survey-based experiment as a better way to determine voter

blame for the shutdown. He explained,

I think the best way to study this would be through a survey-based experiment.

You set up a hypothetical situation where you crib from media accounts and set

up a situation where this is looming. Candidate A says this about it; candidate B

says that about it. You randomly assign people to be presented the information

from candidate A and candidate B and find out…would you vote for this person

or how much do you approve of this person…You could also set this up so that

the party in power releases a statement and the party in opposition releases a

statement. You get to see their spin on it. You could set up the treatment so that

they would be similar enough you could tease out what sort of things resonate.

For all three experts, an experiment offered the best opportunity to collect data on voter

blame for a government shutdown. Using media reports from actual shutdowns, they

could create a situation in which voters could discuss and explain how different aspects

of the situation, such as who the candidates are or what their messages are, sway voters in

their decision of whom to blame for the shutdown.

      However, three of the experts also noted that polling data and experiments would

not likely provide evidence of why voters blamed one person or group over another. In

order to do that, there would need to be additional data collection methods. For example,

E4 said,

> If you want to better understand what we are seeing in polls, you might for
>
> example go to some kind of demonstration or meeting where individuals show up
>
> and ask them what their feelings are. Ask what they are doing there.

E10 offered another idea about how to capture voters' reasoning for blame, one that

combined an experiment with an open-ended survey. He told me,

> In terms of why, that's trickier. You would want to start that in the lab and then
>
> work up to a survey experiment…In the experiment you would allow people to
>
> give some sort of open-ended response and let them speak extemporaneously
>
> about blame attribution to get a sense of why they blamed Congress or one party.

For these experts, the deeper question of why voters blamed the president or Congress

was just as important, if not more important, than the fact that they blamed one over the

other. However, a survey or experiment alone were not the best tools to study the

question of why. In order to answer the question of why, a researcher would need to utilize both a survey and an experiment.

Thus, while nine of the experts cited the importance of evidence and the necessity of it to make any claims about a phenomenon or question being studied, seven of them also noted that the type of evidence was a critical part of answering the research question. Data collected through the research process is the evidence political scientists use to support their claims. In some cases, the experts suggested they might use data from polls or surveys conducted by another researcher, but their overwhelming preference was for collecting their own data. For both problem-solving tasks, the experts relied on quantitative methods for analyzing data in order to draw conclusions and answer the questions. Although they recognized the need for qualitative methods to get at the question of why, their first inclination was to go to quantitative measures in order to explain what factors were at play in each question and how those factors impacted each other and affected the outcome. Even E5, a qualitative researcher, acknowledged that the questions posed in the problem-solving tasks required the use of quantitative methods. This acknowledgement reinforced the fact that these experts understood that many types of data can exist in political science, depending on the question, but the important part is that the data used as evidence are directly related to the question.

Context. Another important piece of experts' knowledge was the concept of context (cf., Wineburg, 1991), which included the historical circumstances, the political environment, the individuals involved, the political institutions, and other circumstances in which a political science phenomenon occurs. Eight of the experts referred to at least one type of context when commenting on the problem-solving tasks. As they did so, they

noted that the context was important because it helped the experts think about and situate the problem in order to answer the question. Context was also important for determining whether findings could be generalized to most situations in which a phenomenon occurs or if the results were specific to the particular phenomenon and the circumstances in which it occurred.

Historical context. Three experts expressed a desire to better understand the historical context (Wineburg, 1991) while considering the Major Legislation task. For example, E2 said, "The first thing is that it depends on when we're asking this question." Ultimately, he did not attempt to answer the question, noting, "There is no way to really say this is true under some political circumstances. You may get a different result with a different partisan landscape." He also explained,

> The power of the parties in Congress has risen and fallen over time if you go back over the 200 years of American history. There are points in time where the parties in Congress have been much more powerful and times when they have been much less powerful. In studying this question I want to know when are we in politics.

E8 agreed that placing the question in the appropriate historical context was important, telling me, "We have to come up with the time frame. Institutional factors at play here mean studying the Congress and the president in the '70s is not useful compared to currently." Similarly, E5 responded to the question by invoking the historical context. He said,

> The other question I would ask is the historical one. How has our answer to this question changed over time? How would we have answered this question in 1964

or '65? How would we have answered it in the 19th century? How would we

answer it today?

Thus, the lack of information about the historical context prevented these experts from

providing an answer to the question. They recognized that *when* something happened

mattered as much as what happened. Without additional information, they were unable to

respond to the question and generalize about if and when party matters for the passage of

major legislation.

Political environment. Context also came up with the Government Shutdown

task, in particular the need to understand the political environment in which a

phenomenon occurred. Four of the experts noted the importance of the political context.

E10 summed up the difficulty of trying to answer the question without a more complete

understanding of the context by saying, "There is too much uncertainty around this to

conclude much of anything scientifically. There were so many things going on in both

cases" included in the documents. He pointed to the popularity of President Clinton and

the fact that Republicans in Congress were still trying to push the agenda that had

propelled them into the majority in the House of Representatives as two factors that

needed to be considered in order to understand the context and answer the question. He

compared that to the 2011 case in which the political environment was very different with

the rise of the Tea Party and the proximity of the possible shutdown to the election of

many Tea Party candidates.

Similarly, E6 commented on the impact of the context for answering the question,

noting,

You have two cases to look at this and in both attitudes are different. The

breakdown is a little different. There are so many different things separating those

cases. If they showed the exact same thing, then it would be more encouraging.

Again, the political environment mattered. In the 1995/1996 shutdown, the parties were

headed into an election cycle, while in 2011, they were just coming out of one. These

factors may have played a role in how the various political actors engaged in the political

fight. Additionally, the partisan makeup of the country, or at least their attitudes toward

the various players, changed, as was evident in the polling data. For E6, these factors

mattered and may have influenced the outcomes. E8 also pointed to several

environmental factors as influencing the outcomes of the two cases and the conclusions

one could draw from them. He explained,

I would be thinking in a case like this about when is it happening in a political

cycle… It also would be conditioned on things like how often does it happen. It's

one thing to say we are shutting the government down. What we have done more

recently is come to the brink multiple times. At that point is the political impact

different? Is the blame different when it is brinksmanship as opposed to the actual

shutdown?

Comparing that shutdown to the potential one in 2011, he continued,

We have a different political environment, it wasn't an actual shutdown, a

different partisan makeup of the public, the rise of the Tea Party and the anti-

Obama stuff that underlies things. There was an anti-Clinton sentiment, but it was

a different magnitude it.

E1 also pointed to other political considerations, such as the fact that some of Congressional leaders in 2011 may have learned from mistakes made in 1995 and 1996. She asserted, "Politicians don't approach the issue the same way each time it happens, which would mean they are not really independent of one another, which would be another methodological problem in trying to study the question." Studying the two cases without taking the potential for one situation to impact the other would make any conclusions about shutdowns in general less reliable.

Each of these experts understood that they needed to consider the political environment in order to answer the questions. Whether it was a difference in which groups had political clout, when in an election cycle the fight over a shutdown occurred, or even the fact that political actors may have learned from previous shutdowns, the fact was that the political environment mattered. Before any conclusions could be drawn about whom voters blame and the political impact, a researcher would need to consider the political environment.

Political actors involved. Three experts pointed directly to the individuals involved as one of the major differences that made it difficult to compare the two cases presented in the documents for the Government Shutdown task. E7 said, "I would have some concerns generalizing beyond the specifics with what was going on with Clinton and the time and Obama and the time." E9 also pointed out, "The interesting thing now in dealing with the threat of a shutdown in 2011, the difference I would note is Obama wasn't enjoying the popularity that Clinton was enjoying at the time that that took place." That difference in popularity was an important factor, in her opinion, in determining who

received blame for the actual or impending shutdown. Likewise, E8 wondered about how things might have been different if the actors were different in 1995. He told me,

> If we had put some other actors in there, let's assume there still would have been a shutdown, would the outcome have been the same? Would the president have prevailed over the Speaker and the House? Maybe not. You had to deal with Clinton's ability to communicate. Gingrich's ability to throw bombs.

Thus, understanding who the major players are in the situation, how they interact with each other, and how the public views them matters for answering the questions of blame and political impact.

Political institutions. Another aspect of context that three of the experts identified related to the political institutions involved in the problems, in particular Congress. As set forth in the Constitution, the legislative branch and Congress were designed to be slow moving and deliberative, such that bills that are introduced must go through numerous steps before they even get to a final vote in both the House of Representatives and the Senate. At any point in that process, bills can get derailed or altered such that, even if the president supported them, they might be completely different from what was proposed. At the same time, the type of bills that begin the process and even get hearings in one or both chambers might be impacted by which party is in control of the chamber. This problem was an important one for E7, who noted,

> A related question is what gets out of committee, as well. Even if it doesn't get all the way through the two chambers and to the president, does legislation that gets out of committee look different when one party's in control versus the other?

Looking only at pieces of legislation that were passed or not would only give part of the picture of how party control impacts legislation. However, if one could look also look at the committees and other parts of the process, one might be able to see a larger pattern of party influence emerge.

Another issue with the political institution is that most legislation that is introduced never reaches the floor of either chamber of Congress for a vote, and if a piece of legislation does reach a vote, it often results in legislation that is different from what was originally introduced. For example, E1 commented on the legislative process when discussing the Major Legislation task. She focused on the fact that many times important parts of the president's agenda never get to a vote in Congress. This lack of a vote could be the result of the fact that the majority in Congress is from the other party, or it could be due to other factors. The information as presented in the problem and in the documents failed to account for this situation since they centered on the passage of legislation. She used Clinton's plan to reform health care as an example, noting,

> You don't pick up situations like Clinton's proposal to reform health care because Congress didn't vote on it. So, supported Clinton 86% in '93 and 86% in '94, well that looks like a nice statistic, but you realize his most important legislation never had a vote.

Failure to include situations like this one in a study of divided versus unified government could distort the results and any conclusions drawn from the data collected.

Context also matters in the Major Legislation task since legislation that reaches the president's desk for a signature often is not the same as when it was first introduced. In some cases, the changes may alter the legislation in ways that may not be ideal in the

president's eyes but the president still signs the bill. For example, E6 noted that the documents for the Major Legislation task did not include a discussion of what the legislation said, what changes it underwent, and if the president saw those changes as acceptable. He explained,

> Another thing that would be an issue is this has legislation and when and what side Clinton took and then the result, which is something was passed and whether or not Clinton signed it. The problem with that is we don't know what was passed. It could be the case that when the president's party is in control that he gets stuff he really wants and when it's not he still gets stuff he would sign. So it's better than the status quo, but it is not movement that is as far as he likes. That would be an important implication of the question that we would not pick up with this.

Thus, there could be a distinction between what the president wants from legislation, what is introduced in Congress, what is approved by Congress, and what the president is willing to sign. Party control of Congress might play a role in determining more than just passage or not; it might also determine to what degree legislation is what the president wanted.

Other circumstances. Four of the experts also discussed other aspects of context that might influence the conclusions one could make about the Government Shutdown task. Specifically, E1 suggested that the small number of instances of an actual government shutdown would make it difficult to respond to the question. E1 noted the difficulty of trying to study the problem by looking at past incidents of the federal government shutting down. She said,

This is a tough question to study because you are going to run into the small n

problem because there aren't that many examples, especially those that are a

result of conflict between the president and Congress over the budget.

To solve this problem, she suggested, "If you wanted to tackle this question in a

systematic way, you might want to go beyond the federal government and see what

happens in state governments." She felt that adding cases where state governments shut

down would complicate and change the context, and therefore the question, but it was the

only way to get a large enough sample to draw any conclusions.

E6, E7, and E10 also noted that the lack of cases in which the government

shutdown made it difficult to answer the question, but they attempted to solve the

problem by creating a separate context in which to study it. E6 explained, "When you

only have a handful of cases, at some point you have to say I don't know. I think that

that's something that social scientists in general and academics are willing to do."

However, instead of giving up completely, they all suggested that a political scientist

could set up an experiment in which participants were given mock news articles or

statements from politicians involved in a shutdown. These participants would then be

surveyed about their reactions to the information and whom they blamed based on the

information they were given. E10 explained,

I would start by studying this with some lab experiments where I would design a

set of stimuli that would look like news reports… Essentially what you want to do

is start out with a framing question. You want to give people two articles, one that

faults the president and one that faulted the Congress. And then see how their

responses change given some would be randomly exposed to one versus the other.

E6 and E7 made similar statements about the type of experiment that a political scientist could design. However, E7 recognized that such an experiment could create another contextual factor, in which participants respond based on their political ideology and/or party identification, especially if the information given to them is presented as coming from a particular individual or party. He cautioned, "If you do the experiment right, the only difference between the two groups is what information they get. Separate it out based on party. You want to randomize within strata defined by party ID. Republicans are still going to support the Republicans, but relative to having seen the information about the shutdown, maybe less so."

In both cases - adding cases from state government shutdowns or conducting an experiment - the experts recognized the importance of the context of the problem. They also acknowledged that their potential solutions for dealing with some of the contextual factors embedded in the tasks might create another set of contextual constraints or alter the conclusions they could draw from the data they collected. Again, though, they recognized those problem constraints and attempted to account for them in the design of their study.

Summary of context. Overall, context became important for two reasons: thinking about the problem and its answer and determining whether or not the findings from studying the questions could be generalized. Because political environments, the power of various offices, and the personalities involved constantly change and evolve, it is important to consider the context before drawing conclusions in political science. Research findings can only be generalized when similar findings result from studying different political environments and personalities that are separated by time and context.

As E6 noted, even though both cases from the documents for the Government Shutdown task "have a Democratic president and a Republican majority in Congress," the two cases had different outcomes.

  Causation and Correlation. In addition to evidence and context, seven of the experts referred to the concepts of causation and correlation in their discussion of the problem-solving tasks. The research methodologies used to study the questions determined whether or not the researcher could make judgments about whether one event, policy, or other variable caused a specific outcome or simply was related to it. For example, E1 pointed to the ideas of causation and correlation while discussing Document E, Abstract from Copeland's Study, during the Major Legislation task. In assessing the author's conclusions, she said,

> I'm a little suspicious of the idea that one of the most important determinants of
> the use of the veto is the scope of government…Government has grown and been
> growing and the use of the veto has also grown. That is going to correlate in a
> time series analysis, but I'm not sure that there is a causal relationship there. I
> doubt that that study is capable of really figuring out what the causal relationship
> is if there is any.

E3 mentioned causation and correlation when discussing the Government Shutdown task and noted the difficulty of trying to determine whom voters would actually blame for a shutdown. He explained, "You could just do a survey and see when there was a government shutdown who they attributed that to. It's going to be correlated with partisanship depending on who is in charge though." That correlation between party and blame would need to be considered and controlled for before any definitive

conclusions could be made. Similarly, E7 mentioned the use of surveys to determine whom voters blame, saying, "You could also get at this with survey questions that aren't done experimentally. So someone asks about the shutdown and what is really happening." However, he also pointed out that doing so would not provide evidence that the shutdown caused voters to blame a particular individual, political party, or branch of the government. In order to do that, he noted, he "would rather do something more experimentally to get at it more causally." In each of these cases, the experts were concerned with determining the cause of specific outcomes, but they recognized that only certain methods could provide evidence of causation. They also recognized that some variables within the problems they were asked to consider might correlate with each other, thereby adding to the complexity of the problem and the difficulty of determining causation.

Sourcing. Three of the experts demonstrated sourcing, the act of examining the author or creator of a document or piece of evidence (Wineburg, 1991), while reading the documents. These experts made judgments about the sources and how reliable or trustworthy they might be. For example, E1 questioned the conclusions made in Document E, Abstract from Copeland's Study. She noted, "This is 1983 so that means the time series analysis would not be very sophisticated compared to what is done today." Due to the lack of sophistication, she wondered if the results and the conclusions were accurate and would be the same if the analysis was done again using updated data analysis techniques. E4 also demonstrated sourcing in two instances. First, while discussing the Major Legislation task, she questioned the reliability of Document D, Vote Concurrence. She asked, "Why wasn't data available for 2007-8," and then asserted,

"There's no reason why that data should not have been available. It's a poor resource if that's the case." The source lacked information that she believed was necessary and available, making the source unreliable. Second, she also used sourcing when reviewing the polling data in Document G, Voter Blame for Government Shutdown: 1995, and Document H, Voter Blame for Government Shutdown: 2011, for the Government Shutdown task. She told me,

> Right away I would want to know the questions that were actually asked because question wording matters. I'd also want to know the methodology of the polls. I would want to know how it was implemented, who was contacted, how they identified voters, are they going on registration lists, self-identified voters … if you're engaging in research you would need to know a lot more about this.

More information was necessary so that she could make a judgment about the reliability of the polling data. If she could trust the polling data, then she could use it to draw conclusions about public support for the president or Congress during the shutdown. E8 made similar comments about the polling data, noting that he would have preferred to conduct the polling himself rather than rely on polling firms and media outlets. If he conducted the polls himself, he believed, he would have confidence in the data to judge the results.

In each of these cases, the experts made judgments about the documents and determined that they would not use the respective sources if they were studying the questions. They did not believe the sources were reliable enough to use as evidence in their studies.

Sub-problems. Four experts acknowledged that the problems prompted additional questions that helped them identify sub-problems (cf., Voss & Post, 1998) embedded within the tasks. For example, according to E8 while reading the documents related to the Major Legislation task,

> I think if I started here at the original question and then started looking at sources…I would find myself complicating the question, adding more to it, looking at it, saying there is more to it than this, I need to make sure I am taking these things into account.

Likewise, E6 noted the importance of the sub-problems while talking about the Government Shutdown task. He said, "We often can't answer the big questions we care about, so we zero in on a narrower question that we can answer and then we build." Such zeroing in was evident in nine of the experts' discussions about the problem-solving tasks, although the sub-problems that were identified for each task were different.

For the Major Legislation task, the experts identified two different sub-problems that one would need to study before answering the task as given. The first sub-problem was whether or not party really matters in the way that Congress functions. E6 explained this idea when he said,

> What I think we would be interested in knowing is does party matter. That would not necessarily mean what party is in control. That just doesn't matter…The richer question is does party matter in Congress. If you can test something about what role someone's partisan identification plays in their decision-making then you can answer the question.

The second major sub-problem for the Major Legislation task identified by the experts was the influence of factors beyond the legislative process. This sub-problem was best expressed by E5, who told me,

> Now I am looking at this thinking isn't there a better way to explain this question by explaining the other things that impact the president's legislation and how they run up against that hypothesis and do they show that oddly enough party control isn't as important as you would think it is or here are the other things in the hopper but notice how important party control is anyway.

Again, in order to get a more accurate picture of the influence of party on legislation, a political scientist would need to look at other factors that might impact what types of legislation do and do not get passed. It might be possible that those other factors are more important in some cases for determining whether the president's agenda gets through Congress than which party controls the majority of seats in Congress. On the other hand, it could also be possible that party is such a large influence that other factors do not change the outcome. Either way, the political scientist would want to determine which is the case.

The experts also identified two sub-problems within the Government Shutdown task. First, there was the problem of blame attribution, if it has an impact and, if it does, what impact it has on the political actors. After reading the task, E6 noted, "This is very similar to the question where does the blame go when it is bad economically in general." Knowledge about blame attribution in general or in other cases would be important for answering the question in the task. Similarly, E8 noted the importance of blame, as well

as the need to understand if and how it differs from the issue of the political impact. E8 said,

> There are a lot of questions embedded in here. One thing I would try to do is parse out what these are. There's an issue about blame. There's an issue about impact. What does political impact mean as opposed to blame. And of course the why question, which is the big question.

E4 identified some of the possible political impacts as "whether trust goes down, whether people lose their seats in offices, whether more people stop paying taxes, stop voting. There's such a wide range of political impact that could happen." However, the question remained whether or not these impacts could be separated from blame. For these experts, the question of whom voters blame for a government shutdown and the political impact of such a shutdown involves the broader issue of blame attribution, as well as the issue of whether political impact is distinct from blame.

The second sub-problem was if public opinion and blame even matter. E5 wondered if there is no political impact, or just a short-term one, would it really matter if the public blamed one political actor or another. He commented,

> There is the other question, why does public opinion matter here. What is the impact of public opinion? Does it change the way the president acts? Does it change the way Congress acts? How does public opinion impact other things? Or does it have no impact? And if not, why not?

One would need to have some knowledge about the importance of public opinion and its influence on political actors in order to understand whom voters blame for a shutdown and why they do so.

In each of these cases, the experts identified sub-problems that the questions posed in the tasks brought up for them. The initial questions led to more questions that needed to be answered before the one posed in the task could be answered. By identifying these sub-problems, the experts noted what knowledge they would need to already have or that they would need to gain in order to make conclusions about the tasks at hand.

Definitional precision. The experts also noted concerns related to the terms used in the tasks and documents. In particular, they wondered how the terms were being defined and acknowledged that different definitions could produce different answers to the problem-solving task questions. This concern was particularly clear in the Major Legislation task, especially when the experts discussed the terms "Congress" and "major legislation."

Five of the experts pointed to the need to define "Congress" because it can mean different things, and depending on how one defines "Congress," different answers for the question might emerge from the data. For example, E9 noted that "Congress" usually means "the House," but she could not be sure. Answering the question based on that assumption might be different than answering it if "Congress" included both chambers. E5 also wondered about the definition of "Congress." He asked, "What if it's not Congress? What if the House and Senate are controlled by different parties? This document doesn't tell me that." Also E8 initially felt, "Majority's pretty easily defined," but he quickly realized that he still needed more information while reading the documents. He said,

> Document A, as soon as I looked at it, it struck me I don't know the answer to one
> of the questions, which is what does it mean by Congress. Does it mean the

House, the Senate, both of them? Legislative control has been split at different

times and the document I am looking at doesn't represent split control over some

of these times with Democratic control in one part and Republican control in the

other.

For these and other experts, the meaning of "Congress" was an important aspect to the

question and needed to be defined before an answer for the question could be developed.

In addition to "Congress," seven of the experts wanted to know what was meant

by "major legislation." These experts found that the lack of a definition for "major

legislation" made it difficult to answer the question of whether divided government

matters for passing legislation that the president supports. E7 said, "You would have to

be careful of what you define as major legislation. Someone who studies this could make

an argument of what is major versus what is not major. Reasonable people might disagree

here and there." Similarly, E9 commented, "I'm not sure what's considered significant

legislation. There might be a subjective definition of significant legislation. That would

be the only thing I would question in making conclusions about significant legislation

whether more or less passes or fails." E4, while reading Documents B and C, also pointed

to the need for a clear definition of "major legislation." She told me, "I would want to

know what's the rationale behind how these were identified. What's the methodology of

choosing these major pieces of legislation?" Finally, E5 made similar statements while

reviewing the same documents. He said,

I would also be asking questions about what are our criteria? Why are we saying

this is major legislation? These are the familiar ones. But why are these

spotlighted? What else could have been spotlighted that isn't here and why isn't it here?

As was the case with the Government Shutdown task, the experts did suggest ways to define "major legislation." For example, E8 suggested looking to the literature to see how it has been defined in the past. He explained, "There has to be some definitional aspect to that guided by what others have done… There may be authorities on that. There may be existing data sets that define major legislation." E1 offered several ideas of how one might define "major legislation." She suggested,

> You can use news coverage of Congress to get some sense of important bills… Another approach has been to look at of all the issues that are being discussed on the Op Ed pages of the newspapers, what proportion of those were handled legislatively where bills were passed that year. You can look at legislation that the president proposes in the State of the Union address and what happens to those… The State of the Union address, as long as they are, presidents still can't cover most things, so you'd assume that those are the highest priority things for the president so that would be another filter you could use to look for important stuff.

E4 made similar statements about the State of the Union and added "platforms adopted during the campaign…statements of administration position...testimony of the executive branch in Congress…speeches given by majority and minority leaders, individual members…"

Overall, the experts pointed to the need for additional information about how terms like "Congress" and "major legislation" were being used. Depending on how these terms were defined, different outcomes and answers to the questions might be possible.

Uncertainty. The final type of disciplinary knowledge demonstrated by the experts was their recognition of when they did not have enough knowledge to answer the question. All of the experts acknowledged that they could not provide a definitive answer to at least one of the questions, and six of them did not attempt to answer either of the questions. When the experts did attempt to answer the questions, they did so because it focused on content from their subfield (institutions or behavior) and/or they were familiar with the literature related to the task. When they did not provide an answer, they recognized that they lacked the knowledge to answer it and needed to study the problem in more detail.

Four of the experts offered an answer to one of the problem-solving task questions. In these cases, the topic was either part of the subfield they studied or the expert was familiar with the literature. For example, E1, an institutionalist, offered an answer to the Major Legislation task. She said,

> I'd say the conventional wisdom in the field as a consequence of research since the 1990s, control of Congress, at least historically speaking, has had less of an impact on the president's ability to pass legislation than you might expect.

E5 and E9, also institutionalists, provided answers to the Major Legislation question as well. E5 told me,

> Here's the obvious answer: a hell of a lot. I would be looking at this question saying my hypothesis going in is that who has control of Congress is an important, highly determinative variable on the success of the president's agenda.

Finally, E10, who studies public opinion and voter turnout, noted his familiarity with the literature and asserted, "Control of Congress obviously matters. It's one of those things

that's probably…it matters a lot and yet it doesn't matter enough." In each of these cases, the expert was already familiar with previous research studies that provided some information that they could use to provide an initial answer, but they also acknowledged that additional research and evidence could provide new insights that could lead to nuances in their responses or new answers altogether.

In other cases, the experts acknowledged their lack of knowledge about the topic, and as a result they knew they could not answer the question. Still, they used their general knowledge about political science to discuss ways to study the problem. For example, E3 was hesitant to answer the Major Legislation question because it was not the subfield that he studied. He explained, "This is not my area. It's more institutions and political parties." Yet, he still suggested ways one might study the question. He said,

> You might look at who's in control of Congress, which party, and the frequency
> of bills coming out of Congress and whether or not those bills are liberal or
> conservative. You would look at the frequency and who can take credit for the
> bill.

Likewise, E8 pointed to his lack of knowledge in the area, saying, "I have to think more broadly in some sense here because this is not my subfield in terms of Congressional politics and what goes on in Congress. Here I have to give you more almost generic response." He then went on to suggest looking at the work of Congressional scholars, the voting patterns of members of Congress, and presidential statements about pieces of legislation. He ended his initial remarks about the question by telling me, "Because I'm not a scholar of Congress, I don't know up front. There's an awful lot of front-end stuff I could do before I could get really specific about what else could happen." In both of these

cases, and others, the experts knew they could not answer the task questions with the knowledge they had. Yet, they relied on their expertise to discuss possible ways to study the questions.

Thus, all of the experts acknowledged their own uncertainty during at least one of the problem-solving tasks. Their uncertainty often resulted from their lack of familiarity with the subfield from which the question came. When they did answer the question, it was because they were familiar with the literature. Yet, even for those few experts who offered an answer to one of the questions, they did so acknowledging that their answer was a hypothesis, supported by previous research, but that could be negated by additional research.

Summary of problem-solving tasks. In addition to showing how they organize their knowledge during the concept sorting and mapping task, the experts demonstrated their disciplinary knowledge while completing both problem-solving tasks. The experts displayed their knowledge and use of evidence, context, causation and correlation, sourcing, sub-problems, and definitions as they grappled with the problem-solving tasks and the documents related to them. Several of them also acknowledged their uncertainty and inability to answer the questions posed in the problem-solving tasks without further research and information. Even when a few did offer an answer, they still noted the possibility that more research into the question might provide a different conclusion.

Summary of Findings from Experts

Ten political scientists completed four tasks designed to demonstrate aspects of their disciplinary knowledge. The four tasks included an interview, a concept sorting and mapping task, and two problem-solving tasks. Each task was useful for bringing forward

different aspects of the political scientists' disciplinary knowledge and expertise, and when looked at as a whole paint a picture of what expertise in political science looks like for these political scientists. The interview afforded the experts the opportunity to define their discipline as a science focused on phenomena related to the government, power, and the distribution of resources in society. Using the scientific method and various data collection and analysis methods, these experts study these phenomena, collect evidence, draw conclusions, and develop theories about how the government and politics work, who does and does not have power in the government, and how the decisions of those with power impact society and the distribution of goods and services. Their conclusions and theories are then reviewed, and in some cases re-tested, by other experts in the field.

The concept sorting and mapping task allowed the experts to create a physical and verbal representation of the way in which they organize major concepts from the discipline. Their organizations included a structure - such as a hierarchy, word web, or piles - which revealed the relationships that exist between and among various concepts in the discipline. Additionally, the experts explained that the discipline is divided into the general categories of institutions and behavior, which was reflected in their card sorts since nine out of the ten experts used these terms (or election in place of behavior) as major categories. However, these experts also acknowledged that there might be other ways to organize the concepts from the concept sorting and mapping task, while also commenting on the relationships between concepts. In this way, they emphasized the complex and interconnected nature of the concepts within the discipline.

Finally, the experts completed two problem-solving tasks. These tasks revealed several aspects of the experts' thinking as they considered the problems and documents

related to them. In particular, the experts discussed the importance of evidence and the need to gather the best evidence for the question asked. At the same time, they also focused on the context of each problem and its impact on the answer to the question posed in the problem. They also considered whether their evidence supported conclusions of causation or correlation, as well as the source of the evidence, sub-problems embedded within the tasks, and the impact that different definitions of key words and phrases might have for answering the questions. Once again, they also acknowledged their uncertainty as many of the experts did not attempt to answer the questions.

Taken together, the tasks revealed that these experts view political science as a scientific discipline interested in the study of government, power, and the division of resources; divided into the broad categories of institutions and behavior; and with specific guidelines and standards of practice. It is a science because of its reliance on evidence and the scientific method, and it requires an understanding of the complex nature of and connections between and among the various concepts within the discipline. Evidence, context, uncertainty, and other concepts and critical thinking skills allow the experts to study the problems and develop theories that can answer questions about how and why the American system of government and politics works as it does.

Chapter Five: Findings from Students

Introduction

Four students studying to be Social Studies teachers also participated in an interview, a concept sorting and mapping task, and two problem-solving tasks. Each of the students recently completed an introductory political science course at the undergraduate level, and like the experts, these students discussed various aspects of the discipline of political science. However, the students' responses to the various tasks were less sophisticated and demonstrated less knowledge about the discipline when compared to the experts.

Beliefs about Political Science: The Interview

As with the experts, I specifically asked the students how they would define political science during the interview. In their responses, the students described what political science is, why it is a science, the importance of evidence, and what political science is not. In some cases, their responses included some of the same ideas as the experts. However, they did not develop their ideas to the same degree as the experts and did not share information about the standards of practice within the discipline.

Definition of political science. Three of the students provided a definition of political science when I asked them, "How would you define political science?" S4, however, told me that she did not "think there is a true definition of politics because it includes so many things like the money, communications … I don't even know how to explain it." She believed that political science is too broad to have a single definition, while also implying that political science and politics are the same thing. This implication

is very different from the experts, some of whom made the distinction between politics and political science explicit.

The other three students all mentioned politics in their definitions, but did not explicitly state that politics is the same as political science. Unlike S4, who replaced "political science" with "politics," the other three students described political science as either the "science of politics" (S1) or the "scientific study of politics" (S2 and S3). S1 expanded on this idea by explaining that political scientists seek to understand "how politics work, how political machines operate, and how political parties react to the same thing." S2 also pointed to the functions of various aspects of politics as part of the discipline of political science, explaining, "Political science involves the politics of a country. You do the presidency, Congress, local and state government. Those are all part of political science and studying how those four things work, what makes them work, what is their function." These students saw politics as the major focus of political science, although they did not specify that politics and political science were the same. Like the experts, S1, S2, and S3 described political science as an explanatory discipline, although for them the focus is on how different aspects of politics work, as opposed to focusing on the government, the exercise of power, and the distribution of resources.

Science of political science. Three of the four students also commented on the scientific nature of the discipline once I asked specifically about it. These students pointed to the fact that political scientists gather data and analyze that data. For example, S3 told me that political science is a science because of "the polls and all of the statistics and the analysis of those statistics." S1 and S2 took that explanation a step farther, explaining that political scientists develop hypotheses and theories based on the data they

collect. S1 said political science is "a science of gathering data and understanding data and making observations and hypotheses about things." Likewise, S2 commented, "You are always having a theory and a hypothesis and you are always trying to prove something to have a conclusion." S4, on the other hand, did not have an explanation for why political science is a science. Thus, three of the students had some idea of the nature of political scientists' work in developing hypotheses and collecting data to support or negate those hypotheses. Again, however, their understanding or their ability to express it was broader and focused on surface aspects of what it means for a discipline to be a science and less sophisticated than the experts'.

Importance of evidence. Three of the students also discussed the importance of evidence when they defined the discipline during the interview. S1 and S2 referred only to the need for "data," but they did not specify what type of data would be needed or why or how they might use the data collected. Meanwhile, S3 cited "polls and all of the statistics and the analysis of those statistics." Again, she did not explain why or how those types of data would be helpful for a political scientist. S2 also pointed to the need for new data when she told me, "You can't use data from 10 years ago. You can use it, but you can't rely on that only. You need to have new, constantly new studies and new information to compare." For these three students, data was important in political science. However, other than citing polling data and calling for new information, the students did not describe or explain what type of data count as evidence or if there is some data serve as better forms of evidence.

What political science is not. Two of the students also noted the difference between political science in college and government courses in middle and high school.

In particular, they explained that political science is not the same as the study of government. S1 believed that in political science "you study the government, but not just the facts." S3 concurred that political science is more than just the facts of government and explained the distinction in more detail. She said, "There is political science and then there is American government. Political science focuses more on politics. It focuses on the workings of politics whereas American government focuses on the foundations…You need to analyze people rather than just have facts." However, neither student explained what they meant by "the facts," and when I asked for more information, S1 could only tell me that "the facts" were "all the things you learned in school." S3, in response to my follow-up question, reiterated that "American government focuses on the foundations" of our government. Thus, at least some of the students believed that political science is different from the study of government. However, their ability to describe that difference and to explain how political science may be different from other disciplines or areas of study was more limited than the experts who saw the discipline as distinct from politics and journalism. They also failed to explain what it means to go beyond the facts and how and why political scientists would analyze people.

Although they each answered in their own way, the students' responses about political science focused on the fact that political scientists study politics and the government. They do so by forming hypotheses, collecting data, and analyzing the data in order to develop theories about how politics works. Also, for at least two students, political science is different from government because political science includes more than just "the facts." However, they did not provide additional information about what it means to go beyond the facts. Still, the students demonstrated an emerging understanding

of the discipline in that they recognized that political scientists engage in aspects of the

scientific method (e.g., forming hypotheses and collecting and analyzing data) and that

political science is unique from other academic endeavors, specifically the study of

American government.

Organizing Knowledge: The Concept Sorting and Mapping Task

The students also demonstrated aspects of disciplinary knowledge similar to the

experts, although not as well developed or extensive. In particular, they showed how they

organize their knowledge of political science during the concept sorting and mapping

task, using some of the same structures and organizing categories as the experts.

However, they did not express their understanding of the structure and categories in the

same way as the experts. Additionally, the students expressed some uncertainty while

completing the task, but rather than acknowledging that there could be multiple ways to

organize the concepts on the cards, the students expressed uncertainty around the

definitions of some of the words. Table 10 shows the major headings used by the students

while they sorted or, in the case of S1, offered by the student after I specifically asked

(see Appendix D for images of all of the sorts and maps).

Table 10

Categories & Connectors in Students' Concept Sorts and Maps

Student	Categories	Connecting Words
S1	No major headings Once asked: elections or parties and branches	None
S2	Politics/Mass Media Federalism Election Representation	Mobilization
S3	Federalism Ideology Election	None

	Politics	
S4	No major headings Once asked: shared what words were in each category but not a heading for the category or a theme to the category	None

Structure and categories. None of the students organized the words from the concept sorting and mapping in exactly the same way as the experts, although they did use similar structures. S1, S3, and S4 placed the words into piles, while S2 created a hierarchy with the words. Whereas the majority of the experts used a hierarchy, the majority of the students used piles. S1 and S4 sorted the cards as they read them, creating piles without specific headings. However, when I asked S1 if there was a theme to her organization, she said, "Obviously it has to deal with the government, but different segments of it and different ways to view it. Looking at government through campaigns and elections or parties and branches." Likewise, I asked S4 to describe her piles (see Figure 5). She explained,

> Public policy, committee, bureaucracy, politics, and decision-making. Politics, there's a lot of bureaucracy, bureaus and the federal bureau in politics. Money and stuff. Decision-making is what politics is… There are a lot of committees in politics. And that's where they form policies. Executive – I got this one right because these are the branches of government. Federalism, direct democracy, ideology, political party, conservative and liberal. These are together because they are ways of thinking and processes. This is a big pile…These all have to do with elections and voting and stuff. You're using mass media to communicate with the public. You're campaigning for yourself or whoever you are endorsing. Participation, like public participation, by voting and voicing your opinion.

Representation because you don't want someone goofy representing you.

Challenger is your opponent. Public opinion matters with voting. Mobilization

because you are traveling a lot. Partisan … that's like parties.

Figure 5. Piles created by S4.
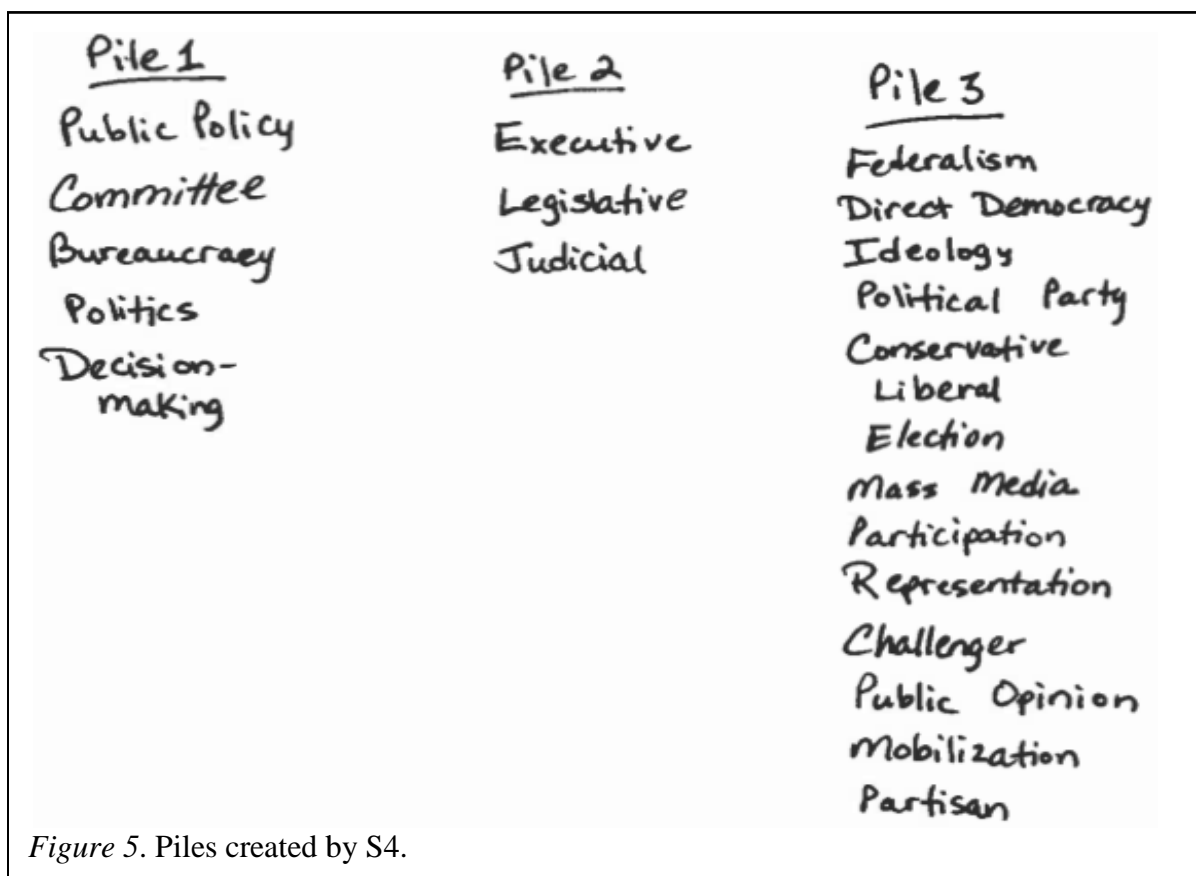
In both cases, the students had an organization in their minds that related to the ideas of

institutions and elections/behavior, but they did not express it in those terms. For

example, S1 described her categories as "elections or parties and branches." She did not

explicitly say that her categories were institutions and elections/behavior, but the experts

described the branches of government as institutions and elections as part of

elections/behavior. Likewise, although S4 did not specify her categories, she did place

many of the words that experts categorized as institutions together in a pile (e.g., public policy, committee, bureaucracy, and decision-making). Thus, these two students appeared to have some idea of the division within the discipline institutions and elections/behavior, even if they did not know to describe it in that manner.

The students also did not share the organization until specifically asked to do so. When they did share it, it was much simpler than that of the experts with little or no description or recognition of the relationships that might exist between and among the words and concepts. Words were placed into piles with other words with which they have something in common, but they did not explicitly identify what those commonalities were.

S3, who also sorted as she read the cards, placed the cards into four piles (see Figure 6). Each of the piles had specific headings, which she said were "federalism," "ideology," "election," and "politics." Once she had established these four piles, she placed each new card under one of these four cards. She explained her use of these four categories, telling me,

> I put federalism at the top because these are all a result of federalism. It's an institution in the US and then parts of federalism are the executive, legislative, and judicial. The checks and balances that federalism needs to function. Next is ideology at the top and then liberal and conservative because those are people's ideologies. I put election at the top and then the election would result in campaigning… Next is politics at the top. I put political party because they are obviously a major part of politics…

In this way, S3 discussed the major divisions of institutions and elections/behavior, even though she did not specifically identify them as such. She discussed how the concepts within each pile are connected to each other, since they all fall into the same category with the same heading. All of the words in the federalism pile were "a result of federalism," while "liberal" and "conservative" were placed into the "ideology" pile because they "are people's ideologies." However, she did not recognize the relationships between the piles; she did not discuss how one pile might be related to another.

Figure 6. Piles created by S3.
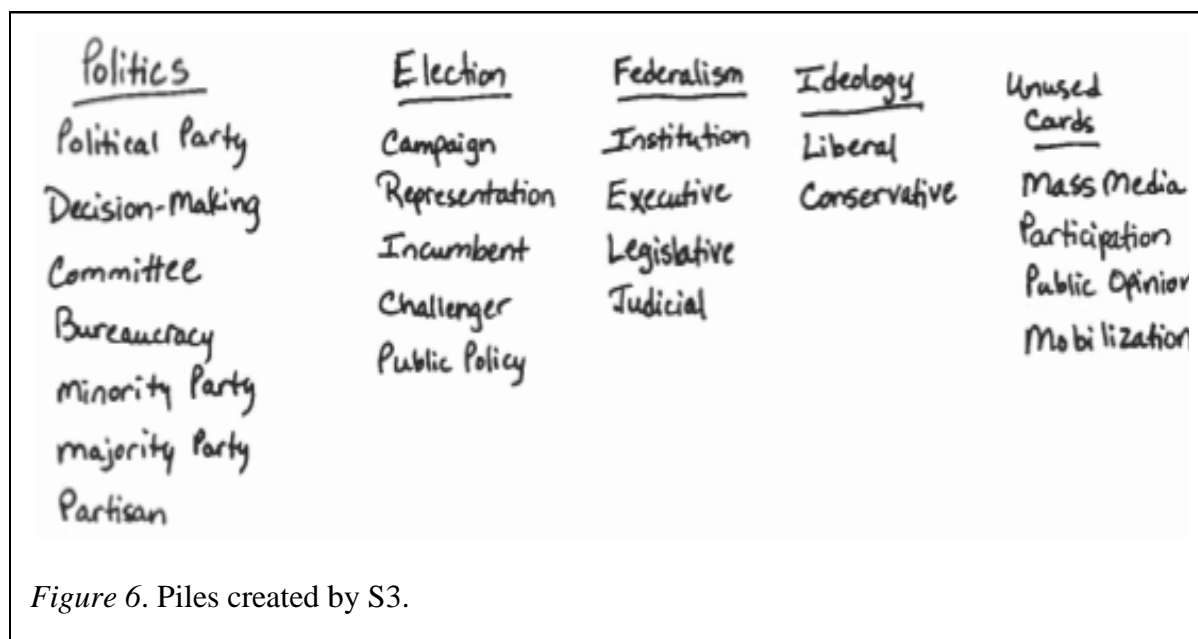
S2, on the other hand, sorted the cards into categories as she read them and then created a hierarchy after reading all of the cards (see Figure 6 for the hierarchy created by S2). At the top of the hierarchy were "politics" and "mass media." Under these cards were the three headings of "federalism," "election," and "representation." As she discussed her organization, S2 told me that everything fell under the heading of "politics and mass media," and if she could draw a line, she would draw one from "politics/mass

media" to "federalism," from "politics/mass media" to "election," and from "politics/mass media" to "representation." Additionally, she used "mobilization" to connect the "election" category with the "representation" category. In doing so, S2 was the exception among the students. Not only did she use a hierarchy, which shows the relationships between and among the concepts more explicitly, she also verbalized the connections. Describing her organization, she said,

> We start with our politics. In politics we have mass media. Media covers our executive, legislative, judicial, elections, and all of our reps in Congress. Federalism I put that there because that is the type of government we have, which is all the institutions… You have conservative and liberal parties, well not parties, but…these are the three branches of government. Under legislative I put bureaucracy because of obvious reasons. Committees we have in the Senate and House. We have a majority party and a minority party in each. Election: see I would have the line here. Mass media covers the elections, and in elections you have a challenger and an incumbent, a political party, they campaign and tell us what they believe in. This would go here, representation of the people. They have to make decisions on public opinion, public policy, and they have to participate in mobilizing and finding out what the people want… Mobilization is going to connect with election and representation because during an election when campaigning you need to go where the people are. Mobilization to me is I need to be mobile and move around.

Figure 7. Hierarchy created by S2.
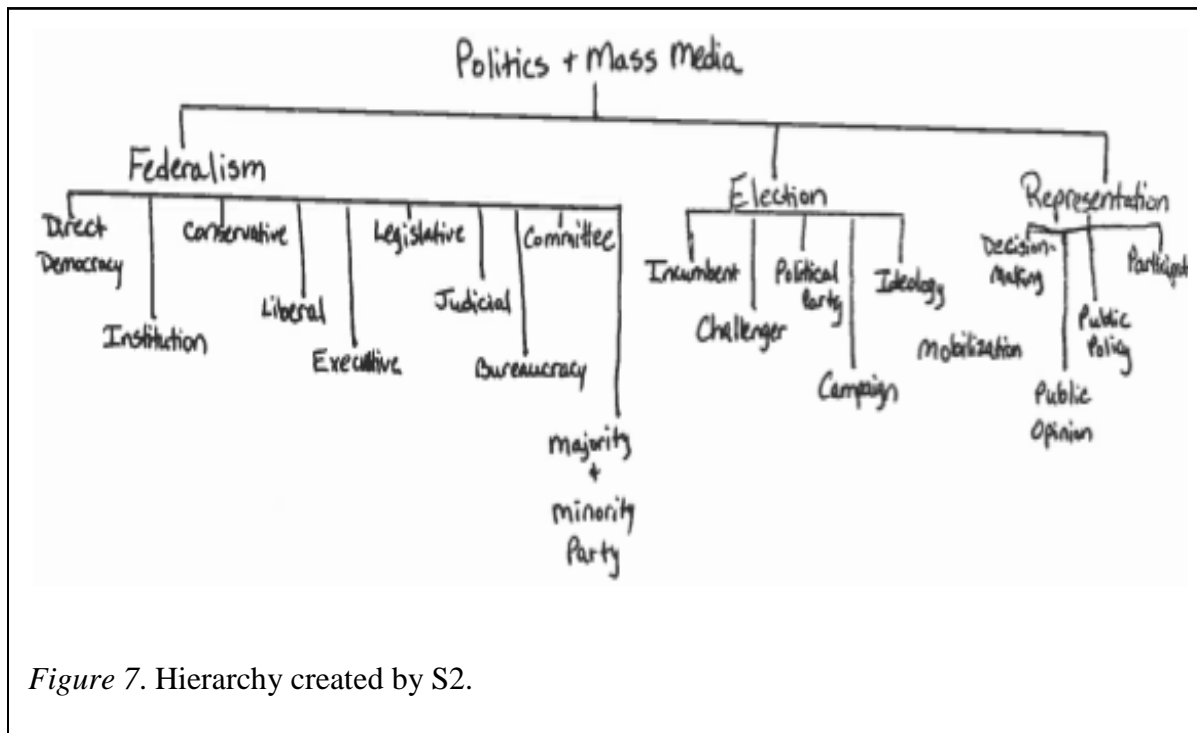
As with S3, S2 used the terms "institution" and "election" in her discussion of the concept sorting and mapping task, although she did not specifically say that these were the major organizing categories within American political science. S2 was also the only student to discuss the fact that the words were connected and to use a word to connect categories.

Through their organization of the cards and their discussions of it, three of the students demonstrated their understanding of the discipline as series of topics and concepts related to government but lacking any connections between them. For them, the discipline was not necessarily a unified field of study since the topics were distinct and unrelated. S2, however, was the exception since she saw at least some connections between the concepts. For her, the discipline was more unified, and the various aspects of it related to each other.

Uncertainty. In addition to their organization, however, I also noticed that three of the students were unfamiliar with the meanings of some of the words, which made it more difficult for them to organize the words. For example, S3 was not sure what "incumbent" meant and did not immediately understand how "challenger" would be used in political science. S4 was also unfamiliar with "incumbent" and "partisan," and did not use either of those words or "institution" in her piles. Neither S4 nor S2, although she used it as the connector between "election" and "representation," described "mobilization" correctly. Rather than thinking of it in terms of motivating voters to participate on Election Day, they both described it as moving around a district or state and contacting constituents in order to get their opinion on public policy. Thus, the organizations of the words for each of these students were impacted by their limited knowledge.

Furthermore, none of the students discussed their uncertainty about how they organized the cards as the experts had. The students did not discuss the fact that other organizations or categories were possible, except in the case of S4 who remained uncertain that she had performed the task correctly. This lack of uncertainty was another indication of their lack of understanding of the relationships between the concepts and the complexity of the discipline. Thus, while the students had some knowledge of how different aspects of the discipline fit together, they did not see it as a discipline with multiple connections and relationships.

It may also be possible that the students assumed there was a correct answer to the concept sorting and mapping task. This possibility is especially true for S4 who told me, "I got this one right," as she explained her pile that included the branches of government.

When we finished with the concept sorting and mapping task, she told me, "I failed." Both of these statements indicate that she believed that there were right and wrong answers, and she did not think she had the correct answer. Although her comments indicated that she thought another organization was possible, she did not think there were numerous possibilities. Rather, there was one organization, and she did not know it.

Responding to the Problem-solving Tasks

While completing the problem-solving tasks, the students used two of the same aspects of disciplinary knowledge as the experts. In particular, two of the students referred to context as an important part of solving the problems and three used sourcing (Wineburg, 1991) as they completed the problem-solving tasks. However, the students also had specific approaches to the problem-solving tasks and documents that differed from the way most of the experts approached the tasks and documents. For example, they all answered the problem-solving task questions with certainty and focused either on the structure of the documents or read the documents literally.

Context. S2 and S3 both referenced the context of the political environment while they talked about the Major Legislation task. For both students, there could be cases when what is happening in the world beyond Congress could be more important in terms of the passage of major legislation than the partisan make up of the Congress and their relationship to the president. Both students used the Patriot Act as an example of such a time when the context was more influential on the outcome of legislation than which party was in power. S2 explained that even though some people might have opposed the law because they believed it violated civil rights and liberties, it still passed both houses of Congress overwhelmingly because of the context surrounding it. She said, "During

times of war, you are going to have things like the Patriot Act. A lot of people think it is an infringement on our right to privacy but because of the terroristic acts and the severity of the situation around it, that's why it got passed." S3 also acknowledged that "everyone was in fear," so they were much more willing to vote for legislation that the president proposed, even if he was from the opposite party.

During the Government Shutdown task, S3 also referred to context when discussing the problem. For S3, the important piece for understanding whom voters blame was how voters viewed the individuals in office. Comparing the shutdown in 1995 and 1996 to the potential shutdown of 2011 was complicated by the fact that President Clinton was more popular than President Obama, who is a far more controversial figure. S3 explained, "Obama has been really controversial since he is the first black president. The first thing people say is, 'Oh it's Obama's fault." However, "Clinton was well-liked before everything happened." Additionally, she noted, "I think it would help to know what they were cutting in the budget because that has a lot to do with voters. If they were cutting education, then people wouldn't be happy about that." Here she was able to see that in addition to the political actors, the context of what government services might be impacted by a budget may matter for how voters react to a shutdown and if and whom they blame. If the president was acting to protect something that voters like, such as education funding, then voters might be more likely to blame Congress.

In each of the above cases, the students recognized that context could influence the answer to the question posed in the task. In the case of major legislation, influences outside of our government could be more important than the partisan makeup of Congress for determining the passage of major legislation. In the case of a government

shutdown, the personalities involved and the particulars of the budget that caused the shutdown could influence how voters react and register their blame. In both cases, the context mattered, and the students recognized that it did. However, other than the political environment and the political actors, the students did not explicitly identify other aspects of context (e.g., the historical context, political institutions, and the number of cases) that might impact the problem being studied.

   Sourcing. Three students also used sourcing (Wineburg, 1991) when they discussed the documents for the Government Shutdown task. S2 noted that she prefers to do her own research rather than rely on the news. She told me, "I'll listen to what is on the news, but I like to research it myself. A lot of times they pick and choose what they tell you, and I don't think it's all objective." The lack of objectivity means that she is not getting the complete story, but rather the story that the media wants to share. Without all the possible information, she cannot make a well-informed decision about the issues. When asked how she conducts her own research, S2 told me, "Google, that's how I would start off most of my research." She also indicated she would use websites like the Library of Congress in order to get information, while she would avoid going to the websites of individual representatives and senators. She did not want to "read about them tooting their own horns." Rather, she wanted to "read what others say about them and what public opinion is about them." Thus, she recognized that an individual senator's website would contain biased information, but she did not share how she would judge the reliability and bias of other websites that she might visit in order to gather information about how others view that senator.

S1 also pointed to the sources of Document K, *The Washington Post* News Story and Document L, *The Washington Times* News Story, in her discussion of the government shutdown. In particular, she noted that the two newspaper articles differed in their reporting of the potential shutdown in 2011, and she attributed that to the political ideology of the newspapers. She was the only participant to do so. After reading both articles, she said,

> I don't know if this is on purpose. I think *The Washington Times* is a conservative newspaper. I don't know about the *Post*. It might be more liberal. I picked up on little differences in the way it was reported. The Times, which is more conservative, had a better spin on it saying we aren't going to have a shutdown… Whereas the *Post* was more of the facts.

In both cases, the students noticed that the perspective of media outlets matters for what gets reported and how it gets reported. The opinions of the audience are influenced by what they read and hear, and that can impact how they view political actors and situations.

S4, on the other hand, referred to a different aspect of sourcing while discussing the task. She focused on the polling questions and how they might influence respondents' answers and the outcome of the poll. She told me, "The way you phrase a question can impact the answer. The responses could be influenced by the phrasing." As a result, polling companies could achieve an outcome more favorable to their "side" by altering the question phrasing.

In all three cases, the students recognized the importance of the source of the documents and the way that information is presented. Different sources could present

information differently, altering one's assessment of the situation. At the same time, the wording of polling questions could influence one's response and the outcome of the poll. For these three students, sourcing was an important part of understanding the documents and answering the questions in the task.

Answering the task questions. All four of the students read each of the tasks and then immediately answered the questions even before reading any of the documents. They saw the questions as straightforward and did not see any sub-problems or complicating factors in either of the problem-solving tasks. In the case of the Major Legislation task, all four of the students agreed that Congress passes fewer pieces of major legislation when the president and the majority of the members of Congress are from different parties than when they are from the same party. S1 responded to the question by explaining,

> Obviously when the president and the majority of Congress are the same party they can get legislation passed much easier. That has been evident throughout our history. Whereas if they are opposite parties, the party in Congress or the president try to block each other because that is how parties work.

For her and the other three students, the answer to the question was an easy one, and three of the students (S1, S2, and S4) believed their response could be confirmed by looking at the historical record. S2 told me that she would look at "the past laws that have been passed, who has introduced them, and what party they are from." S1 and S4 agreed that counting pieces of legislation was the best way to confirm their belief that more legislation is passed under unified government than under divided government. S3, on the other hand, did not address how to study the question.

The students approached the Government Shutdown task in a similar manner. All four had an answer for whom voters would blame, while only one of them attempted to answer what political impact the shutdown might have. S1 and S2 both believed that voters would blame Congress for the shutdown. S1 explained,

> I think voters blame Congress. Usually people blame the president for things, but for an actual government shutdown, because it is a whole group trying to get something done, to the average voter if the whole government shuts down, they are not going to just blame one person.

S2 agreed, saying, "They blame Congress. Why? Because they don't think they are doing their job. They got elected for a reason. That is what people do; they blame them." On the other hand, S3 believed that voters would blame the president. She told me, "The majority of voters are kind of naïve and they go right to the president and blame the president for not getting the budget passed." Finally, S4 explained, "Voters blame everyone but themselves." None of the students explained how someone might study the question of voter blame.

As for the political impact of a government shutdown, only S1 offered a response, while S1 and S2 were the only two who addressed how to study that aspect of the question. In terms of the political impact, S1 said, "For the political impact, nothing would get done to fix the federal budget. If they shut down then they won't fix it." She believed that the shutdown would prevent the government from agreeing to a budget that would both end the shutdown and prevent another one, but she did not have an explanation for how the government would re-open in the event of a shutdown. As for how she could study that question, S1 said that a political scientist could again turn to the

historical record and "see what happened when there was an actual shutdown." For S2, the best way to study the impact would be to "look at the statistics to see where the biggest impact was geographically." To her, the shutdown would result in the loss of government services and subsidies like welfare programs. She would measure the impact by seeing where the loss of these services and subsidies were the greatest and how the residents of the area dealt with the situation.

Approaching the documents. The students also had two ways of approaching the documents. Two of the students focused on the structure of the documents, and their comments were related to how the structure helped or impeded their thinking about the tasks. The other two students discussed the information contained in the documents in a way that indicated their main focus was on comprehension of the documents. In all four cases, it appeared that the students were unsure of what to do with the documents or how they could be used to answer the questions. None of the experts demonstrated similar tendencies when working with the documents.

S1 and S4 focused their comments on how the documents were structured. For S1, the abstracts used in the Major Legislation task (Document E, Abstract from Copeland's Study, and Document F, Abstract from Edwards, Barrett, and Peake's Study) were easier to read and understand than the charts from the other documents because they synthesized information necessary to answer the question into one place. The charts, on the other hand, had just one piece of information and required the reader to do the work of putting it all together. After reading all of the documents for the task, she said,

> I think the abstracts, the last 2 documents, are more helpful than the charts. They
>
> directly lay out what it is, whereas on the charts you have to think about, well

Clinton was a Democrat and the party was Republican. You have to do a little

harder thinking, whereas the abstracts just say what it is. In terms of people who

like charts, these are neat and organized, easy to read. I guess it just depends on

what you prefer to understand.

This focus on structure by S1 appeared to be a product of her desire to be told the answer

rather than to determine it for herself. The abstracts told her what the answer to the

problem was, whereas the charts required that she put the pieces together to come to an

answer.

Similarly, S4 believed that some of the documents were not helpful because they

required the reader to know more information than what was in the documents or to seek

out other documents to support them. Commenting on Document B, Major Legislation

Proposed and/or Enacted During the Administration of President Bill Clinton, and

Document C, Major Legislation Proposed and/or Enacted During the Administration of

President George W. Bush, for the Major Legislation task, she said, "I don't think this

one is helpful because, depending on the president at the time and his political party,

you're not going to know" which party he is from, which is necessary for understanding

how party might impact the passage of legislation. However, she also said that she

preferred the charts to the paragraphs, especially in the case of the Government Shutdown

task because it was less reading and easier to understand. After reading Document I,

Segment from Williams and Jubbs' Study, and Document J, Segment from Meyers'

Study, she explained, "I don't like the format. I don't like that it's in paragraph form. I

wish it were in a grid form, like cause and effect… This is a lot of reading... I don't think

it does anything." For S4, although she needed to put the pieces together when looking at

the charts, she preferred the charts to the abstracts because the charts were easier to read. The abstracts did not enhance her understanding of the problem or her ability to find a solution to it, and their structure as an informational text may have made it more difficult to comprehend what the documents were telling her.

S2 and S3 approached the documents differently, commenting on the information they contained rather than on the structure. They read the documents literally and saw them as containing information, but not necessarily information that was useful for answering the question in the task. Again, unsure of what to do with the documents, these students talked about them but not about their usefulness. S2's comments about the various pieces of legislation in Document B, Major Legislation Proposed and/or Enacted During the Administration of President Bill Clinton, and Document C, Major Legislation Proposed and/or Enacted During the Administration of President George W. Bush, for the Major Legislation task, were more like a stream of consciousness than an attempt to use the information to answer the question. Her thoughts often included other issues or pieces of legislation that came up for her as she thought about what was in the documents. For example, she began reading Document B, Major Legislation Proposed and/or Enacted During the Administration of President Bill Clinton, and said,

> [Obama] was elected in 2008. Yep, Democratic majority party. Clinton, let's
> see…when was Clinton president? Before Barack was Bush and before Bush was
> Clinton and Bush was in for 8 years. So that was 2005… 1997…the majority
> party was Republican. I didn't follow Clinton too much at the time. I am a
> registered Republican, but now that I am educated, I vote. I have always been an
> issues voter. I vote according to what I believe in. I hate the fact that I even have

> to have a party… Healthcare… a Democratic president and majority Republicans trying to pass healthcare reform… Don't Ask, Don't Tell…I think Barack just repealed that. He didn't. He signed the repeal… Clinton did not oppose DOMA. … even though states can recognize same-sex marriages, federally it is not recognized because of that definition…

All of her comments were related to the document, but they had little to do with actually using the document to answer the task question. Unclear as to how to use the document, she talked about the document and her knowledge of things related to it. In doing so, she may have been attempting to use prior knowledge to make sense of both the document and its purpose in the task.

As for S3, her comments appeared to show her grappling with the information in the documents and trying to understand what they were telling her. For example, while reading Document G, *Voter Blame for Government Shutdown: 1995,* for the Government Shutdown task, she tried to understand the polling information in light of her initial thought that voters would blame the president for a shutdown, while also trying to understand why voters would attribute blame as they had. As she read the documents, she commented,

> They're pretty much tied, which surprises me. I would hope people would blame both because both of them aren't getting anything done. I don't know how to … I can't really answer the question anymore… (reading) They said Clinton was acting more responsibly, then it went up for the Republicans after that… It says he had high levels of support in the beginning. In the beginning maybe people are like, 'Yea he doesn't want to let them cut this,' but by the second one people are

like, 'People need to get paid; this is ridiculous.' People want things done the

right way. Once time is getting down to the wire, they just want something done.

(reading) Once they realized what these problems were, they kind of fixed them.

It's basically saying what the other poll said, that the blame is divided throughout

the country.

The comments from S2 and S3 appeared to indicate their attempts to make sense of the

documents in light of their prior knowledge. They read the documents for information

and then talked through the information in order to understand what the documents were

telling them. In the case of S3, she also considered how that information confirmed or

refuted her initial thoughts.

Overall, the students focused the majority of their comments about the documents

on the structure or the content. Unsure of what to do with the documents or how they

might use them to respond to the tasks, they focused on surface aspects of the documents.

Two of them found the structure either facilitated or impeded their understanding. Two of

them commented on what the documents said and either related it to their prior

knowledge or their initial response to the problem. None of the students discussed how

the documents could or could not be used as evidence to support a response to the

questions in the tasks.

Summary

In general, the students demonstrated some of the knowledge that the experts

demonstrated. In their definitions of the discipline, three of the students described it as

the study of politics, acknowledging it as a science because of political scientists' use of

polling data and other statistics to develop hypotheses and theories about how politics

works. Two of the students also noted that political science and government are different because political science involves more than just the "facts" of government. Additionally, each of the students organized the words into categories either in piles or in a hierarchy, although in some cases they were unfamiliar with some of the words or used them incorrectly. One student noted the connections between some of the words and categories, while the other three did not specifically discuss the connections. In terms of the problem-solving tasks, the students demonstrated that context is important for thinking about political science problems. Two students also appeared to use sourcing (Wineburg, 1991) as they thought about some of the documents. Finally, the students demonstrated some of their strategic processing, especially in terms of how they approached the problem-solving task questions and documents. All four of the students answered the questions, even before considering the documents. For two students, the usefulness of the documents depended on their structure – charts or paragraphs - while the other two students focused on what the documents literally said. These two students related the information to their prior knowledge and attempted to understand what the information was telling them. Thus, the students showed some knowledge and skills that the experts demonstrated, but in most cases, they did so in ways that were less sophisticated than the experts.

Chapter 6: Comparing Experts and Students

Introduction

Through the completion of several different tasks, namely a concept sorting and mapping task, two problem-solving tasks, and an interview, a picture of disciplinary knowledge and expertise among ten college and university faculty studying American political science became clear. At the same time, the disciplinary knowledge and expertise of four undergraduate students who represented less-expert individuals because they had taken only one undergraduate introductory political science course was revealed through the completion of the tasks. By comparing the responses of the experts to that of the students, the evidence for different levels of expertise in American political science began to emerge. In particular, there was evidence that the experts had more disciplinary knowledge, more complex ways of organizing and structuring their disciplinary knowledge, and more sophisticated ways of approaching problems and documents. The students possessed some disciplinary knowledge and could organize concepts from the discipline, although they often did so in ways less advanced than the experts. Additionally, the students approached the problems and data differently with far less complex understandings of how to read documents and consider problems. The result of studying both of these groups is the beginning of a distinction between different levels of expertise in American political science. On one level are the students with some disciplinary knowledge, while on another level are the experts with far greater and more sophisticated disciplinary knowledge.

Disciplinary Beliefs

In their discussions about the discipline during the interview and their completion of the concept sorting and mapping task, it became clear that the experts possessed more knowledge than the students. This difference between the two groups was evident in three ways. First, the experts' definitions of the discipline included what they study, how they study it, the standards of practice for the discipline, and in a few cases how it is different from politics and journalism. The students, however, focused their definitions of the discipline on politics, and while they identified some types of data that political scientists collect and how they might analyze it, they did not describe the methods for collecting that data or the standards against which the conclusions from that data would be judged. Second, all of the experts discussed the subfields in the discipline, in particular that there are those who study institutions and those who study behavior. This division of work was evident not only in what they said about the discipline, but also in how they described themselves and how they categorized the concepts in the concept sorting and mapping task. The students did not express a similar division and did not share any sense of what concepts and phenomena are part of the discipline other than "government" and "politics." Finally, during the concept sorting and mapping task, there were instances in which both the students and the experts expressed some uncertainty. However, the uncertainty was different for each group. The students did not know the definition of some of the words on the cards or defined them incorrectly, while the experts' uncertainty was a result of the relationships they saw between concepts within the discipline. Those relationships make political science a complex discipline whose

organization could not be easily described, leaving the experts uncertain that their organizations were the only possible organizations of the discipline.

Definition of political science. The breadth and depth of the experts' knowledge, as compared to that of the students, was on display when the two groups discussed their definitions of political science. Table 11 provides an example of how one of the experts and one of the students defined the discipline. The expert's definition was more complete and contained more aspects of the discipline. The expert also referred the scientific nature of the discipline before I specifically asked about it, although he also expanded upon his explanation of the science in political science when I specifically asked about it. The student, on the other hand, noted that political science is the "scientific study of politics" but did not share what that meant until I specifically asked about it. In both cases, the question of how to define the discipline was unexpected and not something that either participant had consciously thought about beforehand. Despite this fact, the expert was able to come up with a clear and concise definition that included many of the aspects of the discipline that his colleagues included in their definitions. The student, however, struggled more with the definition, providing one response and then switching to another line of thinking. Also, when asked what the science in political science was, she repeated part of her definition, commenting that the "polls and statistics" were the reason it is a science.

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Table 11

Definition of Political Science: Expert v. Student

E2	S3
I would define as the attempt to use the scientific method to study political problems and the interactions between members of the public and elites, within and together. The immediate goal is to get a better understanding of why things work the way that they do and to be able to rely not just on conventional wisdom, not just on knee-jerk partisan interpretation of things going on, but to be able to have a real evidenced-based understanding of why things work the way they do. There is an emphasis in political science on trying to explain, on trying to use systematic tools to understand and explain why things happen the way that they do, so that in the long run we can make a better judgment about why these choices were made.	There is political science and then there is American government. Political science focuses more on politics. It focuses on the workings of politics whereas American government focuses on the foundations of that. Political science looks more at what is going on now in politics. You have to look at polls, at everything, and see why the public votes certain ways and what do people like and not like and how people vote and why they vote… I don't know. The scientific study of politics. That would be my easiest way to say it. I think it would be the best.

In general, the experts defined the discipline of political science as a scientific inquiry focused on the government, power, and the distribution of resources. They identified the scientific method as the primary approach to studying a problem related to government, power, and the distribution of resources, and but it is not the same as politics and journalism. The experts also explained that they arrive at theories about how and why political institutions and actors behave and function as they do by analyzing the data they have collected. They then share their theories and procedures with their colleagues in the field, who critique the theories based on their data collection and analysis methods and the evidence provided to support the theories.

For the students, political science is the study of politics. It involves the collection and analysis of data, in the form of polls and statistics, and it entails more than just the

facts of what American government is. The collection and analysis of data is what makes the discipline a science. With this definition, the students demonstrated that they have some understanding of what political scientists study (e.g., politics) and how they study it (e.g., collect and analyze data), but the students either did not know or did not have the words to describe the full depth and breadth of American political science. They also needed to be prompted in order to share how political scientists study the discipline, while the experts integrated this information into their definitions of the discipline.

 Subfields in the discipline. Another aspect of knowledge about the discipline that was evident from the experts but was missing from the students was the acknowledgement of the division between those who primarily study institutions and those whose principal focus is behavior. All of the experts identified themselves as either an institutionalist or a behaviorist while completing at least one of the tasks (Table 2 in the Methods chapter lists which experts identified as studying institutions and which as studying behavior). Four of the experts identified their subfield during the concept sorting and mapping task, while the other six mentioned it during the problem-solving tasks. They often did so as a way to explain why they had more or less familiarity with one set of words or one problem over the other. Yet, even though the experts identified with one subfield, they were still able to complete the concept sorting and mapping task and discuss both problem-solving tasks. They not only knew enough about the discipline to know the major subfields within it, but they also had enough disciplinary knowledge to organize concepts and work through problems related to another subfield within the discipline.

The students did not explicitly discuss the subfields of institutions and behavior or appear to favor one over the other. However, in their concept sorting and mapping tasks, there was evidence of the division between institutions and behavior, even though they did not express an awareness of these divisions. In all four cases, the students sorted cards that dealt with the branches of government together and those that dealt with elections and campaigning together. For three of the four students, there was at least some recognition that things related to federalism and the branches of government are similar, while those related to elections do not fit in the same category. Thus, they had some knowledge of the subfields within American political science, but they either did not know how to describe it or were not consciously aware of it. In either case, the students lacked certain knowledge that the experts had, specifically the fact that American political science is divided into at least two major subfields, institutions and behavior.

Uncertainty. Another way in which the students demonstrated the difference between their knowledge and that of the experts was the fact that they were unsure of or did not know how some of the words from the concept sorting and mapping task are used in political science. This lack of knowledge resulted in the misuse of these words. For example, S2, S3, and S4 all struggled with what "mobilization" meant in political science and how it fit with the other words. S3 eventually used it correctly, explaining that it referred to a candidate motivating his or her supports to vote, but S2 and S4 did not use it correctly. They both believed that it referred to a politician or candidate traveling throughout his or her district or state to campaign and listen to voters' concerns. S3 and S4 also struggled with the term "challenger," although they both eventually were able to

determine the correct definition in the context of political science. S4 also did not know what "incumbent" meant, and as a result did not use it in her concept sort and map. Additionally, she incorrectly defined "bipartisan" as when "the president is one party and then the Senate and the House is another party." Although "bipartisan" was not one of the words in the concept sorting and mapping task, "partisan" was, and S4 used her definition of "bipartisan" to place "partisan" in the pile with "election." At the same time, only one student explicitly referred to the relationships between various concepts, and none of the four students discussed the complex nature of the discipline.

The experts, however, did not struggle with the definitions of the words; they struggled with how to organize the cards. Knowing and understanding the discipline in greater detail, the experts saw a series of relationships between the terms that created a complexity that was difficult to demonstrate visually and only in one way. They used three different structures, a hierarchy, word web, and piles in an attempt to show these relationships, while they also discussed the relationships verbally. Still, there was an acknowledgement from the experts that other organizations were possible.

The uncertainty for the students came from their limited knowledge of the discipline. Without knowing how all of the words were defined in the discipline, they struggled to complete the concept sorting and mapping task. In some cases, they talked through their uncertainty and were able to come to the correct definition, but in other cases they were not. With more knowledge of the discipline, they may have included all of the words in their concept sorts and maps and/or placed the words in different configurations. They also may have recognized the complexity of the discipline that results from the relationships between various concepts. On the other hand, the

uncertainty for the experts came from their extensive knowledge of the discipline. They understood how various concepts related to each other and how that made it difficult to create a visual of their field.

Structuring the Discipline

There were also differences between the experts and students in the ways that they organized and structured their concept sorts and maps and, by extension, the discipline. In the case of the experts, they organized the cards based on the two subfields of American political science and made the relationships between the concepts explicit either in their structures or in their verbal explanations of the structures. The students, on the other hand, tended to place the words and concepts into simpler categories, did not specifically organize the cards on the basis of the subfields, and they were far less explicit about the relationships that exist between the concepts. Even S2, who used a hierarchy, discussed drawing lines from the top category to the three major categories, and used a word to connect two of the categories, talked about the relationships in a less sophisticated way.

Table 12 below provides an example of the differences between how the experts who organized the cards into piles discussed the piles and how the students talked about them. In this example, the expert considers how to sort the words so that they make sense. She creates guidelines for herself in terms of the level of specificity a particular pile has, while also considering other places she might put some of the cards. She needed the guidelines in order to make distinctions that allowed her to create multiple piles rather than just one or two large ones. In doing so, she recognizes the complexity of the discipline and the relationships that exist between various concepts in the discipline. Still,

she leaves open the possibility of changing the configuration, which is another

acknowledgment of the complexity of the discipline.

Table 12

Piles as an Organizing Structure: Expert v. Student

E9	S1
Executive and judicial I see as the branches of government, so I feel they are very specific to branches of government, so they are really clear categories that define them. They could go into another category more broadly fitting into process of government. I could see them fitting maybe here, but these were more specific and this was more process than branch. This [pile] talked a little bit more about exogenous processes of the government, so mass media and public opinion affecting how the government operates… I mean it could sort of fit into this category now that I think about it. I could put it in here and not feel too bad about it, but this was more specific about actually getting people elected. You could really make the argument about the fact that public opinion and mass media matters for elections, but this was more specific about the process of elections so I left it out in its own category. I could easily have put it in if I wanted to. You weren't specific about category, but if you had told me I needed x amount of categories and it had to be less than I could have easily put it in that category… When I look at these terms I see this as being the header, so political party, and then majority, minority, challenger and incumbent…That is probably the one out of all of these that called to me as being the label of the category and the others easily fit behind. Over here, I'm sort of an institutionalist, so this fits pretty easily into the institutional category. I see this being maybe the process of federalism. I guess federalism could fit anywhere because you	Legislative and executive would go together because they are two of the three branches of government. Challenger has to do with an election, as does incumbent. In an election there is an incumbent and a challenger. Direct democracy is not our government. It's not completely a direct democracy. Minority party and partisan I will put together because they both have to do with parties. Decision-making … political party with that group. Federalism I will put with direct democracy because it's different types our government kind of employs. Majority party with this group. Election with incumbent and challenger. … I'll put institution with those. Judicial I'll put with legislative and executive. Liberal with the political party because a liberal mindset tends to go with the Democratic party. Same with conservative and Republican. Campaign with election. … Politics with the parties because obviously it's political. Bureaucracy and committee together because committees can be bureaucratic, so it sticks out in my mind. Mass media and public opinion together because media affects public opinion for the average voter. Ideology with the party group. Mobilization with the election group because a lot of people in campaigns try to mobilize voters. Participation in this group because people can participate in elections and they form their opinion by the mass media. Decision-making with this group because each branch of government makes decisions. Same with public policy I'll put more with the legislative and

could easily justify being part of the federalist system. I saw it being maybe being part of Congress, as one branch of federalism. You have legislative and then within committee function, institution being part of Congress and then committee. The bureaucracy that takes place within federalism. The decision-making process and then what comes out of it is public policy. Then here you have the category ideology and then liberal and conservative.	executive part. Representation I will put with legislative.

In the case of S1, she recognizes that certain words and concepts fit together, and she puts many of the same words together as the expert. She also appears to have at least some understanding of the divide between institutions and behavior based on how she sorted the cards, although she does not verbalize it. However, she does not struggle with where to place any words, even the words that perplexed many of the experts. For example, S1 quickly placed "decision-making" in a group with the branches of government because "each branch of government makes decisions." She did not appear to consider that voters and political parties make decisions as well. For S1, political science is simpler and more straightforward than it is for E9, who mentions that some cards might fit into different piles. Therefore, E9's discussion of her piles demonstrates the complexity of the discipline in a way that S1's discussion does not.

Similarly, the hierarchies created by the experts and S2 have certain aspects in common but also demonstrate differences. One example of such a comparison can be seen in Table 13, which compares the hierarchy of E4 with that of S2. Again, the expert had certain guidelines in mind when she sorted the cards. She divided the cards into institutions and behavior, then allowed the Constitution to guide her placement of cards that fell under institutions. On the other side of the hierarchy were the words associated

with behavior. Additionally, E4 explained that the importance of a word or concept (i.e., whether or not the word or concept was necessary to know in order to understand the discipline) guided her decision about where to place it. She also acknowledged that the organization of the words could be different based on what aspects she wanted to emphasize. Thus, E4 created a hierarchy guided by the Constitution and what she deemed to be important and in which the relationships and connections were explicit.

Table 13

Hierarchy as an Organizing Structure: Expert v. Student

E4	S2
Politics is at the top, but it's also throughout everything… This is what I would consider the institution side. Fundamentally if you are talking about American politics, you need to know something about how we are structured. You can't talk about anything unless you understand we are a federalist structured government… Then we typically let the Constitution guide us, what the founders intended. Legislative is the first article, so that comes first. Executive second and judicial is third… On one side are the institutions and then the other side typically is political behavior. Though you don't have behavior here anywhere, these are all things we would discuss when talking about political behavior… They could be organized in any shape or manner. I would usually start with party or I might start with public opinion… How I present information depends on how I want to relay the information in terms of importance. For example, I always talk about representation first and about Congress because I want them to understand this is fundamental and a critical function of the legislature. Maybe in the current political climate I might want to start with public opinion and then move into the rest… People can argue it any number of ways. I would probably do political parties, elections and campaigns. This is the traditional mode of participation for	We start with our politics. In politics we have mass media. Media covers our executive, legislative, judicial, elections, and all of our reps in Congress. Federalism I put that there because that is the type of government we have which is an institution of direct democracy. I don't know if it really is direct democracy. You have conservative and liberal parties, well not parties, but…these are the three branches of government. Under legislative I put bureaucracy because of obvious reasons. Committees we have in the Senate and House. We have a majority party and a minority party in each. Election, see I would have the line here. Mass media covers the elections, and in elections you have a challenger and an incumbent, a political party, they campaign and tell us what they believe in. This would go here, representation of the people. They have to make decisions on public opinion, public policy, and they have to participate in mobilizing and finding out what the people want. Mobilization is going to connect with

most citizens. The parties start to mobilize and then you can talk about public opinion. Mass media I typically don't touch on at all. If I did it would come at the very end.	election and representation because during an election when campaigning you need to go where the people are.

S2 also created a hierarchy and placed many of the cards in the same categories that E4 had. However, S2's placement of the cards seemed less purposeful once she got beyond the top of the hierarchy. She placed cards with some similarities in the same category but did not appear to have any specific rules or guidelines about how to judge those similarities or into which categories to place words. S2 also did not specifically discuss the cards in terms of institutions and behavior, although she did sort the cards into these major categories. Additionally, S2 acknowledged that there are some relationships between the concepts on the cards, specifically noting that there would be lines from "politics/mass media" to "federalism," to "election," and to "representation." She also used "mobilization" to connect "election" and "representation," and she moved cards around frequently, especially the words at the top of the hierarchy, before settling on her final configuration.

Thus, S2 demonstrated many of the characteristics of the experts while completing the concept sorting and mapping task, especially her recognition of the relationships that exist between concepts within the discipline. Yet, her reasons for placing many of the cards where she did was not as well reasoned as the experts, and she did not specifically discuss the division of the discipline into the subfields of institutions and behavior.

These differences between the experts and the students may have been due to the fact that the students have less knowledge and experience in the discipline. They may have lacked either the knowledge or the terminology (or both) for how to organize and

discuss the discipline and the concepts from it found on the cards. Still, the students also demonstrated different aspects of expertise in the discipline. S2, with her hierarchy and acknowledgement of the connections between the concepts, has disciplinary knowledge that differs from S1's knowledge. Yet, both students' knowledge varied from the experts. Therefore, the tasks used in the study were useful for determining that differences between experts and novices exists with potential variation within each of these groups.

Approaching the Problem-Solving Tasks and Documents

The experts and students also had different ways of approaching the problem-solving tasks and the documents. Again, these variations helped to highlight the different levels of expertise that exist in the discipline of American political science. In particular, the experts saw the problem-solving tasks as complex problems with multiple aspects and questions that needed to be considered and answered before a theory could be developed as a solution to the problem. In many cases, they did not even attempt to answer the question(s) posed by the problem, focusing instead on other aspects such as the context and sub-problems embedded within the problem. Similarly, the experts approached the documents as products of their authors and as pieces of information to be analyzed and questioned. They identified positive aspects of the documents and deficiencies that made them less helpful for responding to the questions.

The students approached both the problems and the documents very differently. They viewed the problem-solving tasks as uncomplicated and immediately responded to the questions with a definitive answer. In a very few instances they acknowledged the importance of the context, but they did not indicate that the context changed their answer. They also did not identify sub-problems. Likewise, the students either viewed the

documents as containing factual information or did not know what to do with them. Despite their comments in the interview about the importance of evidence for the study of political science, they did not use the documents as evidence when faced with a problem. Instead, they focused on the structure of the documents or on the literal content contained in them, which could indicate that their knowledge is still developing or they remember hearing that evidence is important but do not know what that means in practice.

Problem-solving tasks. Table 14 provides an illustration of the differences between the experts and the students in their approach to the problem-solving tasks. In many cases, the experts did not attempt to answer the actual question that was posed in the task. However, there were four experts that provided an answer to at least one of the tasks before reading the documents. They did so because they were familiar with the literature and/or the question fell within their subfield of institutions or behavior. Still, even while answering the question, they acknowledged that additional research or contextual information has changed or could change the answer. Table 14 therefore includes an example of one expert who did respond to the task and an example of one that did not. It also includes an example from the students.

E1 responded to the Major Legislation task before reading the documents because the question is primarily about institutions, which is her main subfield of study, and because she was familiar with the literature related to the question. Her response was based in the literature and on the consensus opinion of other experts in the field rather than just on her own thoughts about the topic. She also acknowledged that the literature has evolved, implying that her response was a theory, not fact, and that additional research in the area might lead to different conclusions about the importance of party on

the passage of major legislation. On the other hand, E7, who primarily studies behavior, did not attempt to answer the Government Shutdown task, which was primarily a behavioral question. He recognized the importance of the question and then immediately began discussing how he might study the question. In this instance, he understood the need to study the question in order to answer it, while he also provided one possible method for studying it. Yet, he was still aware of the limitations of his knowledge concerning the task, even if he was familiar with the literature on voter blame or other topics related to the task. In both cases, the experts recognized what they knew and did not know and used their disciplinary knowledge to think about and discuss the question. Still, in both cases, the experts identified the task as a problem to be solved through the collection and analysis of data. They saw their role as problem solvers in search of the best answer given the available evidence.

Table 14

Problem-Solving Task: Experts v. Student

E1	E7	S1
This is certainly a question that falls very much in political science. It's been the subject of lively debate. I'd say the conventional wisdom in the field as a consequence of research since the 1990s, control of Congress at least historically speaking has had less of an impact the president's ability to pass legislation than you might expect. David Mayhew's work really fueled this debate showed that divided or unified control of	This is an important question from the standpoint of political science. I think it's got real practical implications too. I'm sure the leadership in Congress would want to know the answer to these questions… I think the best way to study this would be through a survey-based experiment. You set up a hypothetical situation where you crib from media accounts and set up a situation where this is looming. Candidate A says this about it, candidate B says that about it. You randomly assign people to be	Obviously when the president and the majority of Congress are the same party they can get legislation passed much easier. That has been evident throughout our history. Whereas if they are opposite parties, the party in Congress or the president try to block each other because that is how parties work.

government doesn't make much difference for the passage of important legislation. Subsequent work has revised that finding a little more of an effect than he found, but it's not as big an effect as you might anticipate given what seems to be the overwhelming importance of partisanship.	presented the information from candidate A and candidate B and find out… would you vote for this person or how much do you approve of this person… there's lots of experiments you could do, you could set it up so that the party in power releases a statement and the party in opposition releases a statement… You could set up the treatment so that they would be similar enough you could tease out what sort of things resonate. And then I think you can develop a statistical model about the characteristics of the individuals that blame one camp versus the other. You could also get at that more directly with open-ended survey questions. In this line of research, that generally doesn't happen as much. It should happen more in my opinion. The political impact, that part of that you would get at with the candidates. You can rate the parties or ask questions like the Republicans are in control and they are proposing a shutdown, how likely would it be that you would vote for the Republican candidate for president. If you do the experiment right… the only difference between the two groups is what information they get. Separate it out based on party. You want to randomize within strata defined by party ID. Republicans are still going to support the Republicans, but relative to having seen the	

| | information about the shutdown, maybe less so. You could also get at this with survey questions that aren't done experimentally. So someone asks about the shutdown and what is really happening. I think you can tease that out as well, but to get at it more causally I would rather do something more experimentally. | |

S1, on the other hand, approached the task differently. In her response, S1 immediately answers the question after reading it (before reading the documents). She gives a short, definitive response (in fact, the answer is obvious), with only a passing reference to how she knows that this is the correct response (i.e., "That has been evident throughout our history."). Although she alludes to the fact that there is evidence (since she believes it to be "*evident* throughout our history"), she does not explain what that evidence is or what makes the answer evident. She does not point to a specific researcher, as E1 did, to support her claim, and she does not recognize that the answer might depend on contextual factors or change based upon additional research. For S1, rather than seeing the task as a problem that she needed to solve, she proceeded as if the problem had already been solved. Her role was to provide the correct answer to the problem. Yet, her belief that the answer is evident demonstrates that she might have some emerging knowledge of the fact that answers to problems in political science are based on evidence, even if she does not know exactly what that evidence is.

In terms of how they approach the problem-solving tasks, the experts and students did so very differently. The experts relied on the literature and on their disciplinary

knowledge in order to provide a tentative answer to the question or a possible method for

researching the question. In the case of E1, her response was a theory based on the

research studies of other political scientists. The experts also viewed themselves as

problem-solvers who needed to find the best solution to the problem based on the

evidence available to them. The students, on the other hand, provided a definitive answer

to the problem with little evidence to support their claims. They saw the problem as one

that had a correct answer and treated their responses as facts that they had learned, rather

than as theories. Still, in at least one case, there was an acknowledgement that evidence

did exist to support their claims. Again, more knowledge provided experts with a more

complex view of the discipline. In comparison, the students had enough knowledge to

develop a reasonable response to the tasks and to allude to the need for evidence to

support their claims, but they did not have the same degree of knowledge as the experts.

They could not cite specific research as evidence, and they could not recognize when

they did not have enough information to offer a tentative response or withhold one

altogether.

      Working with data. Table 15 provides an example of the different ways that

experts and students approached the documents in the problem-solving tasks. I presented

the documents to both the experts and the students after they initially thought about the

task, and asked the participants to address four questions about the documents, including,

"Which of this data are the most useful to you in considering this problem? Why?" (see

Appendix B, Section 4 for the full protocol). The experts were different readers from the

students, especially as they analyzed the documents, noting aspects of them that needed

more explanation or more precise definitions. They were skeptical readers and recognized

that an author created the documents, and while the documents included some information that could be helpful for answering the questions posed in the tasks, the experts also found that the documents led to more questions and provided only a fraction of what was necessary for answering the task questions.

E8's response to the documents provides one example of how the experts viewed and used the documents. He began by recognizing additional questions that the documents brought up for him, such as how the author is using the term "Congress" and what is meant by "major legislation." Furthermore, even though he read the documents individually, he also thought about them as a whole set of evidence, noting that Document D (Vote Concurrence) had a different type of information from Documents B (Major Legislation Proposed/Enacted During the Administration of President Bill Clinton) and C (Major Legislation Proposed/Enacted During the Administration of President George W. Bush). He assumed that Document D contained information about all roll call votes, while Documents B and C contained information only about legislation that the author of the documents considered important. This difference made it difficult to compare the information, but it also gave him more information to consider. He also noted the importance of context for understanding some of the data contained in the document, and he discussed how he might use some of the information in the documents to help him answer the question in the task. Finally, he realized the complexity of the question as a result of reading the documents, noting that they helped him think about other things he needed to look at or ask in order to be able to answer the question.

Table 15

Approach to the Documents: Expert v. Students

E8	S1	S3
Doc A as soon as I look at it, it struck me I don't know the answer to one of the questions, which is what does it mean by Congress. Does it mean the House, the Senate, both of them? Legislative control has been split at different times and the doc I am looking at doesn't represent split control over some of these times with Democratic control in one part and Republican control in the other. Obviously having data in front of me about who controls Congress is fairly important however we are defining control of Congress. Doc B… Obviously this is somebody's definition of major legislation…Very few of us would disagree that Clinton's effort at health care reform or NAFTA or FMLA are major. The question would be, "Is this all-inclusive?" One of the risks on a question like this is that definitional risk. What's major legislation, what's the cut off, how do we define it? I would look at something like this and say what was the basis on which the source defined this as major… Doc D… Presumably Docs B and C are major legislation. This document, at least on its face, sounds like it's about all roll call votes. It's not directly comparable to the previous documents… If we are just interested in voting with the president's position on everything, then we have it here. The problem we have just looking at this independently is we have to know those earlier data. We have to put it all together. It's meaningless to say 6% concurrence if I don't know	I think they are helpful. I think the abstracts, the last 2 documents, are more helpful than the charts. They directly lay out what it is, whereas on the charts you have to think about well Clinton was Dem and the party was Rep. You have to do a little harder thinking, whereas the abstracts just say what it is. In terms of people who like charts, these are neat and organized. Easy to read. I guess it just depends on what you prefer to understand.	They did a poll. In '95… oh wow. So they polled that 49% blame the Republicans... I am surprised the lowest blamed both. A week later, it dropped down. More people blamed both. Then it dropped down again. It stayed the same, but the percentages changed a little. CBS has the same as ABC. They all have relatively the same, they all blame the Republicans… with this some are blaming the Republicans and the others are blaming Obama, which doesn't surprise me because Obama has been really controversial since he is the first black president. (reading) Again they said Clinton was acting more responsibly, then it went up to the Republicans after that… (reading) It says he had high levels of support in the beginning… It's basically saying what the other poll said that they blame is divided throughout the country. (reading) I guess it's true they are playing politics because that's

which party is in control and which party is in the presidency… There's usefulness here, but as it stands it's not directly useful to the particular question we're asking here. It needs more context. Doc E is an abstract… It's in some sense the flip side of the question. It's asking for the president's side with the assumption that the president wouldn't veto something he agreed with. But that's not actually the question we're asking. I mean I guess it is because it's back to that question of what do we mean by impact the passage of…This is the kind of piece one would pull up in doing a lit review and trying to get context for it. It would probably help in trying to identify the kind of variables, the kind of data one would want to collect on this… I think if I started here at the original question and then started looking at sources, particularly at the last two abstracts, I would find myself complicating the question, adding more to it, looking at it, saying there is more to it than this. I need to make sure I am taking these things into account… I'm thinking it's a more complicated question and there's more I need to think about.		what they do… (reading) It hasn't really changed. It's gone a little more to blame Obama, which I stated before. Clinton was well-liked before everything happened… (reading) This is just saying the Republicans are pointing fingers at Obama and it is a fight over what should be cut and everything. These would all help answer the question.

The students approached the documents in two ways that were different from the experts. Two of the students commented on the structure of the documents and its impact on their thinking, while the other two students read the documents and commented on what the documents literally said. In both instances, the students appeared to lack an understanding of how to read and use the documents, and therefore they read the documents for information and focused on their comprehension of them. They did not

read the texts as critical readers, but rather as consumers of information. S1 is an example of reading the documents and focusing on the structure. After reading all of the documents, she commented on her preference for the abstracts over the charts because the abstracts contained the more of the information that she needed. The charts left her to piece the information together herself, resulting in the need to do more thinking about what the charts were trying to tell her.

S3, however, commented on each of the documents as she read them. While doing so, she noted what the documents were telling her, literally what they said, and then she considered whether they would be helpful for answering the question. She did not explain why or how they would be helpful, just that they would be. At the same time, she did note some aspects of context, pointing out that the differences in the polling numbers between Clinton and Obama could be due to the controversial nature of Obama's presidency. Still, in both cases, the students focused on the contents of documents, viewing them as pieces of information for them to comprehend but not sharing how or why the documents might help answer the problem.

Once again the different levels of expertise come into view when comparing how the experts and the students approached the documents. The students were less sure of what to do with the documents or how to use them as compared to the experts who immediately began to question and analyze the documents as they read them. Also, the students saw the documents as factual pieces of information and said they were useful for answering the task questions, but they did not actually relate the documents back to the task questions. On the other hand, the experts viewed the documents as products of their authors that needed to be analyzed and viewed individually and as a whole in order to

understand how they might help answer the task questions. These differences appeared to stem from the differences in how the participants viewed the task and themselves as readers. The experts were critical readers, looking for information and evidence to support or refute a solution to the problem, while also understanding that the texts themselves were the products of their authors and needed to be vetted before relying on them. The students were consumers of information and read the documents as factual pieces of information that they attempted to assimilate into their prior knowledge related to the problem tasks.

However, both the experts and at least one of the students considered how context might impact the documents and their interpretation of them, which requires disciplinary knowledge. Therefore, while the students did not have as much knowledge of how to work with documents, which is an aspect of disciplinary knowledge, they did demonstrate some emerging disciplinary thinking in the form of considering the context. As was the case above, the students had less expertise compared to the experts, but did not appear to be complete novices.

Differences in Expertise

From a comparison between the experts and the students who completed the same concept sorting and mapping task, problem-solving tasks, and interview, the different levels of expertise in American political science emerge (see Table 16). The experts demonstrated their expertise in a number of areas, including in their knowledge of the discipline and its nature as a scientific discipline, their understanding of the standards of practice in the discipline, their identification with either the subfield of institutions or behavior, their recognition of the complex nature of the discipline and the relationships

that exist between concepts in the discipline, and their approach to the problem-solving tasks and the documents. On the other hand, the students provided a more general and simpler definition of the discipline, failing to include the subfields and to explain the standards of practice in the discipline and the scientific nature of the discipline beyond the inclusion of polling data and statistics. Furthermore, the students did not know what all of the terms on the cards meant, and they had less developed ways of organizing and conceptualizing the discipline. As a result, a few of them defined a word incorrectly when completing the concept sorting and mapping task, and they often organized the concepts into piles with little explanation of how the terms were related or why they fit together. They also approached the problem-solving tasks as problems with definitive answers and the documents as little more than pieces of information to be comprehended. Thus, there are several differences between the two groups that provides insight into what expertise looks like compared to less expert individuals.

Table 16

Levels of Expertise: Experts v. Students

	Students	Experts
Disciplinary Beliefs	• One correct answer • Study of politics • Political science is a science because it involves polling, statistics, and the collection of data	• Knowledge through scientific inquiry o Includes use of scientific method, evidence, and standards of practice • Knowledge is constructed • Study of government, power, & distribution of resources • Subfields of institutions and behavior
Conceptual Knowledge	• Less substantive knowledge • Organization does not show relationships	• Extensive substantive knowledge • Organizations show relationships & complexity
Strategic Processing	• Do not use evidence • Read documents literally, for comprehension	• Identify sub-problems & problem constraints • Understand that documents are constructed o Make judgments about documents and the information contained in them

Still, the students, while novices when compared to the experts, did demonstrate

some aspects of disciplinary knowledge that a true novice in the discipline might not. The

students did mention the importance of data and analysis in the discipline. They also

organized the concepts from the concept sorting and mapping task into categories that

included institutions and behavior, even if they did not express the categories in these

terms. One of the students (S2) also made the relationships between different concepts in

the discipline explicit in her organization of the words in the concept sorting and mapping

task. Furthermore, the students recognized the importance of context when considering

the problem-solving tasks, even if they did not fully understand or explain how it might change their thinking about the problems. This emerging disciplinary knowledge may be a result of their participation in a college-level introductory American political science course or participation in their government courses in high school, which all four students took. Many of the experts who participated in the study taught the introductory course and explained that they include information about the subfields, the scientific method, and the need for evidence in their discussions with students. It is possible that the students' political science instructors did so as well. Additionally, the emerging disciplinary knowledge could also be the result of the students' own interest in social studies and/or American politics.

As a result of these comparisons, it is clear that there exist differences between these experts and these students in terms of their knowledge and understanding of American political science. There is also evidence to suggest that some variation exists within each of the groups. In the interview, S4 equated political science with politics and declined to define the discipline. She also did not include references to science, evidence, or other aspects of the scientific nature of the discipline in her response. During the concept sorting and mapping task, she did not know the definitions of all of the words, indicating that she did not have the same level of conceptual knowledge as other participants in the study. She also organized the cards into piles that did not appear to have any theme or pattern to them. When asked about the piles, S4 described which cards and words where in each pile, but nothing else. For the problem-solving tasks, S4 answered both of the questions before she read the documents, and then referred to the structure of the documents when evaluating them. She did not appear to know what to use

the documents for or how to connect them to the tasks, and therefore focused on her comprehension of the documents.

S1 and S3 differed from S4 in their beliefs about the discipline and their organization of the words and concepts from the discipline. These students defined political science as an explanatory science and acknowledged the importance of evidence, such as polling data, although they did not use the evidence presented to them during the problem-solving tasks. Like S4, S1 and S3 organized the words and concepts into piles during the concept sorting and mapping task, although they did not know the definitions of all of the words. However, they did describe their piles in terms of the patterns or themes that unified all of the words in each pattern, such that they acknowledged some coherence and connection between the words in the same pile. During the problem-solving tasks, both S1 and S3 performed in ways similar to S4. They answered the questions before reading the documents, and when presented documents, they were unable to use the evidence in those documents to work through the problems. S1, like S4, focused on the structure of the documents, while S3 was concerned with her comprehension of the information contained in the documents.

S2 also demonstrated some variation in her organization of the words and concepts and her recognition of the connections and relationships that exist between them. She created a hierarchy, which shows the relationships between concepts visually, and she discussed drawing lines to connect the heading of her hierarchy to the three concepts below it. S2 also used a word to connect two of the categories in her hierarchy, again acknowledging the connections between concepts in the discipline. One possible explanation for the difference is that S2 would prefer to teach government rather than

history when she finishes her degree, and she also has more life experience than the other students. However, she performed like the other students in many of the other tasks. She defined the discipline in much the same way as S1 and S3, and she answered the problem-solving questions before reading the documents. Furthermore, she did not know how to use the documents to help her respond to the task questions; instead, she focused on the literal information in the documents and her comprehension of it.

There were also variations within the experts. For example, while completing the concept sorting and mapping task, E3 created a hierarchy, used "mass media" as a connector, and discussed the relationships between the words in much the same way as many of the other experts had. However, he only used 15 of the 26 words, and all of the words he used were words directly related to his subfield of behavior. He explained that he did not "look at [political science] through institutions," and therefore did not include those words he believed to be related to institutions. In doing so, he recognized the distinction between the two subfields, but he did not acknowledge any link between them.

Furthermore, during the problem-solving tasks, E3 commented on whether the questions posed in the tasks were questions that a political scientist might study (telling me, "Political scientists would definitely be interested" and "This is a reasonable question"), but unlike the other experts, he did not identify sub-problems or seek definitional clarity (though he did discuss causation and correlation). Similarly, when he read the documents, he commented on their usefulness for answering the questions posed in the problems, but he did not discuss or analyze them further without prompting. After reading the Major Legislation documents, he said, "All of them seem like they would be

able to address the question." After prompting him for more information, he began to

question Document E, Abstract from Copeland's Study, but quickly stopped and told me,

"It's just not my area." For the Government Shutdown task, he told me, "This seems like

all these documents would be helpful in some way." However, in this case, he did discuss

the documents in more depth once I asked him to elaborate. Unlike the other experts, who

discussed questions and documents from outside their subfields, E3 did not.

Additionally, I saw a difference between E5, E9, and E7 and the other experts in

the concept sorting and mapping task. Both E5 and E9 organized the cards into piles, and

neither of them used any words to connect the piles. As was described above, compared

to hierarchies and word webs, piles do not show the relationships that exist between

words and categories to the same degree and may represent a less sophisticated way of

thinking. However, the experts that used piles to organize the words relied on their verbal

reports to describe the relationships between the words, which both E5 and E9 did. Both

experts described the piles as having a heading or a theme that unified the piles (and did

so without prompting), and both of them moved cards several times before settling on the

organization, indicating their uncertainty and the complex relationships that exist in the

discipline. E7 was the only other expert to use piles, but he included a hierarchy within

one of the piles and connected the various piles using some of the words, which

demonstrated more sophisticated thinking about the discipline and the relationships

between words and concepts within it.

The remaining experts (E1, E2, E4, E6, E7, E8, and E10) organized the cards

using hierarchies or word webs. In doing so, they demonstrated the relationships and

connections within and between the concepts and categories visually, and their verbal

accounts included discussions of and expanded upon those relationships. In each of their hierarchies and word webs, these experts used institutions and behavior/elections as major categories and placed other words within both categories, regardless of whether they considered themselves institutionalists or behaviorists. In some cases, they used additional words as category headings as well, and they were able to describe how those categories were unique and explain why they had placed the cards in those categories. Furthermore, all of the experts except E3 evaluated the problems and the documents, identified sub-problems and constraints, and discussed ways in which they might study the problems. Again, their identification with a particular subfield did not appear to hinder their ability to demonstrate their disciplinary knowledge when considering both problem-solving tasks. Thus, differences existed even within the group of experts.

The differences between the experts and those with less expertise resulted from variations in their knowledge about the discipline and the ways of thinking in the discipline. In this study, the students had less conceptual knowledge compared to the experts, and they were less likely to use the same processing skills as the experts. It is possible that as they gain knowledge in the discipline they will also gain more expert-like understandings of the relationships between concepts in the discipline and more expert-like ways to read documents and consider problems. Even the experts in this study were once students who likely had less knowledge about American political science and learned by working with and learning from more expert teachers.

Chapter 7: Conclusions & Implications

Over the last decade, numerous research studies have found that civics and American government courses often focus on the transmission of information from textbooks and teachers to students (Chambliss, Richardson, Torney-Purta, & Wilkenfeld, 2007; Hess, 2009; Kahne & Middaugh, 2010; Kahne, Rodriguez, Smith, & Thiede, 2000; Kirby, Levine, & Elrod, 2006; Levine & Lopez, 2004; Lopez & Kirby, 2007; Niemi & Niemi, 2007; Torney-Purta, 2002; Torney-Purta, et al., 2005; Westhiemer & Kahne, 2004). The result of this type of teaching, at least according to the measures we currently have available and utilize, has been the failure of the majority of students to learn about American government, to become invested in our system of government, and to indicate their desire to participate in the future. On the 2010 NAEP, about one-quarter of students in grades eight and 12 scored "proficient" or "advanced," while the remainder scored "basic" or "below basic." These results showed no statistically significant gain for these two grades levels since the 2006 administration, and, in fact, scores actually were lower for the 12th grade students. Only students in grade four made statistically significant progress between the 1998 and 2006 administrations and the 2006 and 2010 administrations. Still, less than a third of fourth graders scored "proficient" or "advanced" in 2010. Additionally, verbal accounts from students reported by Gimpel and his colleagues (2003), Kahne and Westheimer (2003), Torney-Purta and her colleagues (2002; 2005), and others have indicated that students find their civics and government courses boring, leading many to become disinterested in participating in the future. In response to students' comments and test scores, some researchers and educators, such as those involved in the development of *The Civic Mission of Schools* (2003) and its

successor report, *Guardian of Democracy: The Civic Mission of Schools* (The Leonore Annenberg Institute for Civics & the Campaign for the Civic Mission of Schools, 2011), have called for an increased emphasis on critical thinking. Until this study, there has been no research base for understanding what critical thinking looks like in government and its related discipline of political science. Therefore, I looked to history education as a field in which defining the discipline has led to a better understanding of critical thinking in that discipline and a more robust approach to teaching that is grounded in research.

Using the work of Lee (1978; 1984; 2005), Wineburg (1991), and other history education researchers, I developed a plan to study the disciplinary knowledge of experts in the field most closely related to civics and American government, namely American political science. Studying political science experts and students was an attempt to understand what skills and knowledge experts use in their work. This research can serve as theoretical grounding for educational outcomes for civics and government classes, as well as additional research on and the development of methods for teaching high school civics and American government students rooted in disciplinary knowledge and thinking. As with history, I hope that teaching disciplinary skills and knowledge might lead to an increase in students' knowledge of and engagement in government.

Using a concept sorting and mapping task, two problem-solving tasks, and an open-ended interview, I investigated four questions related to what expertise in this subfield of political science looks like, how experts conceptualize the discipline, and what cognitive processes they use in their work. These questions included:

1) Is it possible to describe the dimensions of expertise in political science in the subfield of American government and if so what are the dimensions?

2) Can problem-solving tasks that represent expert work in this area elicit experts'
disciplinary knowledge parallel to what has been done in history education
research?

3) What disciplinary knowledge do American political science experts use when
engaged in such problem-solving tasks?

4) What disciplinary beliefs do American political scientists have about the
discipline?

In order to answer these questions, I recruited two different populations. The main
population for the study was university faculty teaching and conducting research in
American political science. I also compared the experts to students who have taken an
undergraduate college course in order to make the distinction between the knowledge and
processes of experts and those of individuals with less expertise clearer and to begin to
develop a continuum of expertise. Understanding distinctions between experts and non-
experts may be useful in future research on the development of curriculum and teaching
methods for civics and government. Ten experts in American political science and four
students participated in the study, which revealed several aspects of expertise in
American political science that may become the foundation for critical thinking in civics
and American government courses. I synthesize my main conclusions to each research
question below.

Dimensions of Expertise

One question I investigated was whether or not it was possible to describe the
dimensions of expertise in American political science and, if so, what those dimensions
are. The present study confirmed many aspects of expertise found in the literature (as will

be discussed below), but also added specific details about these aspects that characterize the study of American political science. Unlike other studies of expertise, the present study included only participants who focused their research on or took an introductory undergraduate course in American government and political science. Another major study of the expertise of political science experts was Voss and Post's (1988) study. However, their study included individuals who specialized in the Soviet Union, others with knowledge of the Soviet Union, and chemists. Rather than seeking to understand general aspects of expertise in political science, as Voss and Post (1988) described, the goal of the current study was to determine specific disciplinary knowledge and skills of experts in American political science. I was interested not only in how experts thought about the tasks presented to them, but also how they went about solving the problems and what they needed to know and do in order to solve them. Additionally, I was also interested in experts' beliefs about the discipline in an effort to better understand how they think about the discipline. Voss and Post (1998) did not specifically investigate these beliefs. As a result, my findings are aligned much more with the high school curricular content I am interested it, namely American civics and government.

Characteristics of expertise evident in the present study consisted of many of the dimensions of expertise named by researchers whose work has focused on identifying what makes someone an expert. In particular, the dimensions of expertise identified in the present study included experts' organization of knowledge (Berdard & Chi, 1992; Glaser, 1985), their use of scripts and other guidelines when solving problems (Schraw, 2006), their identification of sub-problems and problem constraints (Voss & Post, 1988), and their acknowledgement of uncertainty (Berdard & Chi, 1992; Voss and Post, 1988; and

Wineburg, 1991). While the participants of the present study demonstrated these aspects of expertise, they did so in ways that were specific to the discipline of political science and with a focus on American government. These aspects of political science expertise are described in more detail below.

Organization of knowledge. During the concept sorting and mapping task, the experts revealed the core concepts that help organize and guide their thinking in the discipline, namely institutions and behavior. Berdard and Chi (1992), Glaser (1985), and others noted that the organization of one's knowledge is an important aspect of expertise, as is the recognition of connections and relationships between and among concepts in the discipline. Likewise, Novak and Gowin (1984), Freeman and Jessup (2004), Miller and his colleagues (2009), and Williams (1998) found that concept maps could be used as tools to distinguish between experts and novices within a discipline. Specifically, they noted that experts tended to have greater depth and breadth of knowledge as demonstrated by the number of concepts and levels used in their maps. Experts also tended to have a more complex understanding of the concepts and their relationships, which were evident from the links between and among concepts. However, these researchers did not identify ways in which experts organize concepts specific to the discipline of American political science. Likewise, they did not identify major organizing categories for the discipline or explain what relationships exist between and within those categories.

The present study, on the other hand, provides insight into the way experts organize information specific to American political science. The experts in my study identified institutions and behavior as the two major subfields within American political

science and created organizations that reflected these two divisions. Some of the experts

added additional categories, but these categories were often added because the experts

felt that the words fell outside of those categories created by the two major subfields.

Additionally, the experts recognized the relationships that exist between and among the

categories. They demonstrated these relationships by creating structures like a hierarchy

or word web that made the connections visually explicit, by using words like

"representation" and "political party" to link different categories or words within a

category, and by discussing the relationships and complexity of the discipline (e.g., E2's

comment that "Everything is interconnected."). Thus, the political scientists demonstrated

their expertise by organizing the discipline around institutions and behavior and by

acknowledging the connections between and among the words and concepts in the

discipline.

    Solving Problems. The two problem-solving tasks allowed the experts to

demonstrate how they go about solving a problem and what thinking skills and cognitive

processing they use when working in the discipline. While completing these tasks, the

experts demonstrated some of the dimensions of expertise identified in the literature.

Schraw (2006) identified aspects of expertise, although they were not specific to

American political science. He noted that experts tend to use scripts to guide their

thinking and help them monitor their thinking, as well as algorithms and heuristics that

help solve problems. Yet, his discussion was not specific to American political science in

the way that this research was.

    Similar to Schraw's (2006) description of expertise, the political scientists

recognized underlying structures and features of problems and used scripts and heuristics

as guidelines when solving problems. For example, experts discussed the importance of evidence and the need to collect the appropriate type of evidence for the problem. They also recognized that some data collection methods, such as an experiment, could provide them with evidence of causation, while other types could only lead to claims about correlation. Finally, the experts considered the source of the documents related to the tasks. They recognized that the documents were products of their authors, and they considered the reliability of the information contained in the documents before using that information as evidence to support a particular problem solution. In each of these instances, the experts utilized specific plans and rules to guide their thinking about political science problems and the documents in an effort to come to the best solution.

Sub-problems and constraints. The experts also identified several sub-problems embedded within the tasks, as well as different constraints that complicated the problems in the same way that the experts in Voss and Post's (1988) study did. In their study, the experts identified sub-problems and constraints related to the agriculture problem in the Soviet Union. In my study, the experts identified problem constraints, such as historical context, the political environment, and the personalities involved, and sub-problems specific to the two problems I presented to them. One problem focused on the major subfield of institutions (Major Legislation task), and the other focused on behavior (Government Shutdown task). Other constraints unique to the study included the terms used in the problem-solving tasks and in the documents corresponding to those tasks. Again, in the present study, I was able to confirm the conclusions of previous researchers, but in a way that was specific to American political science and the two subfields of the discipline.

Uncertainty. Additionally, the experts acknowledged their limited knowledge and did not provide definitive answers to the concept sorting and mapping task and problem-solving tasks. This recognition of when experts can answer these types of problems (Voss and Post (1988) termed them "ill-structured" because there is no clear solution to the problem) and when they offer possible answers but not definitive ones is another dimension of expertise described by Berdard and Chi (1992), Voss and Post (1988), and Wineburg (1991). All of these researchers noted the importance of this type of metacognitive self-regulation, but their findings differed from those in the present study in important ways. For example, Berdard and Chi (1992) and Wineburg (1991) noted the tendency of non-political science experts to acknowledge their uncertainty, while Voss and Post's (1988) experts were political scientists but not Americanists. In Wineburg's (1991) study, the experts were historians who could not conclude anything definitively because they only had a few pieces of evidence available to them. These experts recognized that they could only give a tentative answer based on what was available to them. On the other hand, Voss and Post (1988) asked their participants to "imagine" that they were agricultural ministers and solve a practical problem. They acknowledged what they did not know, but still attempted to answer the question.

However, in the current study, I asked the experts to think about more theoretical and less practical problems and to consider ways in which they might research the problems. As a result, the political scientists recognized the questions as ones that they or their colleagues might study and offered potential research methods for studying the questions. Their focus remained on how to gain knowledge about the question(s) being studied, rather than on the right answer to the question(s). Additionally, they were far

more concerned with how they would collect their own data and what data analysis methods they would use rather than on how to use the information presented to them in the documents. They evaluated the documents, but unlike the historians, they generally did not use the information in them to draw even tentative answers because they preferred to collect their own data.

Overall, the experts in the present study demonstrated many of the aspects of expertise identified by researchers like Berdard and Chi (1992), Glaser (1985), Schraw (2006), Voss and Post (1988), and Wineburg (1991). However, the political science experts did so in ways that were specific to their discipline of American political science. Thus, the way in which they organized their knowledge, the sub-problems and constraints that they identified, and the scripts they used were focused on studying problems related to American government and political science and its subfields of institutions and behavior.

Can Problem-Solving Tasks Uncover Disciplinary Knowledge?

I also investigated whether problem-solving tasks could elicit experts' disciplinary knowledge parallel to what has been done in history education research. While the answer to this question is also in the affirmative, there is a caveat. As was discussed above, the problem-solving tasks allowed experts to identify and discuss problem constraints and sub-problems, talk about and use scripts that helped to solve the problems, and discuss their uncertainty. There was also evidence of other aspects of the experts' conceptual knowledge, including the importance of evidence, the need to consider context, the difference between causation and correlation, and the influence of definitions on problem solutions. However, the experts were resistant to actually

engaging in the tasks. They focused their comments on contextual aspects of the problems and on how they would research the problems. They were more inclined to collect their own data, conduct their own polling, and design their own experiments than they were to work with the data provided to them in the documents. They evaluated the documents and discussed if and how they were useful, but the experts did not then attempt to answer the questions using the information contained in the documents.

As a result of their focus on context and their desire to collect their own data, I was not able to observe the experts' strategic processing to the degree that I would have liked. There were glimpses of strategic processing, but it was difficult in some cases to distinguish when the experts were using their conceptual knowledge and when they were using strategic processing skills. For example, it was clear that experts engaged in metacognitive self-regulation when they noted their uncertainty about the concept sorting and mapping task and when they recognized that they could not answer the questions. In both cases, the experts thought about their own knowledge and thinking and determined what they knew and what they did not know. On the other hand, the experts talked a great deal about the scientific method and its importance for collecting data and drawing conclusions. The scientific method is a script (Schraw, 2006) that provides scientists with a plan for proceeding within the discipline. The use of this script would be an example of the experts' strategic processing, yet I did not observe the experts using the scientific method. I observed them discussing it, which is evidence of their conceptual knowledge of it but not necessarily their strategic processing. Similarly, the experts discussed the importance of evidence for answering questions and making claims about a phenomenon, but I did not observe them using evidence. Again, I was able to collect data about their

conceptual knowledge (e.g., evidence is important) but not about their strategic processing when using evidence. At the same time, I did observe how they processed and thought about the evidence that was presented to them but not how they might use the evidence to solve a problem.

One explanation for my inability to observe the experts engaging in strategic processing more concretely involves the problem-solving task questions. In both task questions, I asked the experts, "How would you study such a question?" This question directed the experts to focus on what research methods they would use to study the problem, which they did. Due to the scientific nature of the discipline, collecting data is an important part of studying a problem, and as experts engaged in thinking about the tasks, it makes sense that their inclination would be to describe what data they would collect and how they would use that data. Yet, I did not provide an opportunity for the experts to collect their own data, which limited my ability to see their strategic processing. Future research would benefit from tasks that allow experts more occasions to demonstrate their strategic processing, such as observing an expert while he or she conducts his or her own research or asking experts directly to solve the problems posed to them. Doing so would provide information about what types of questions experts in the discipline investigate, as well as information about how they go about researching phenomena and what strategic processing they use when conducting that research.

Still, the problem-solving tasks used in this study did allow me to observe experts' conceptual knowledge and some aspects of their strategic processing. As a result, it became clear that there is a key difference between historians and American political scientists. While historians focus on understanding the past through analysis of evidence

left behind by others, political scientists are focused more on the present and on collecting and creating their own evidence. In some cases, they may use data collected by others and they may study the past to understand the present, but the inclination of the experts in this study was to collect their own data and draw conclusions about the present state of government, power, and the allocation of resources.

Disciplinary Knowledge Evident in Problem-Solving Tasks

I also investigated what disciplinary knowledge experts use when engaged in problem-solving tasks. The study did provide insight into what knowledge experts use when they engage in tasks related to their discipline, specifically knowledge about evidence and causation and correlation; recognition of problem constraints such as context, sourcing (Wineburg, 1991), and definitional precision; identification of sub-problems; and acknowledgement of uncertainty (see above for discussions of sub-problems and uncertainty). As was the case above, the experts demonstrated aspects of the each of these types of knowledge in ways that characterize the study of American political science. For example, during the problem-solving tasks, the experts noted the importance of evidence, as did the historians in Wineburg's (1991) study. However, the types of evidence that the political scientists looked for was different in some cases. Like historians, the political scientists did note that speeches and newspaper articles could be used as evidence, but they also pointed to counts of legislation, polling data, and data gathered during experiments as evidence for the questions in the problem-solving tasks. For these political scientists, the question(s) asked and phenomena studied dictated the type of evidence needed, and only experiments could provide evidence of causation, although other types of evidence could show correlation.

Context was another aspect of experts' disciplinary knowledge that was evident during the problem-solving tasks. Similar to evidence, the historians in Wineburg's (1991) study also demonstrated the importance of context in their work, but the political science experts described several different types of context. Historical context was one type of context that the political scientists discussed during their consideration of problem-solving task questions, but the contexts related to political actors and the nature of political institutions, as well as other contexts, were also important to the political science experts. The focus in the discipline on government, power, and the allocation of resources, make these types of context important to consider before drawing conclusions about political science phenomena.

Additionally, the political scientists demonstrated their knowledge of sourcing (Wineburg, 1991) and the need for better definitional precision. The political scientists noted that the author of a particular source or piece of documentary evidence might influence the information contained in the source, which could then impact any conclusions drawn from that information. One aspect of political science is that this concern about the source extends to the way polling and interview questions in a survey are asked, which may have been part of their reason for wanting to design and conduct the polls and surveys themselves. They trust their own methods, but are less likely to trust the methods of others, especially if they cannot evaluate other's methodologies.

The experts also noted concerns related to the terms used in the tasks and documents. In particular, they wondered how terms were defined and acknowledged that different definitions could produce different results. For example, the experts pointed to the need for additional information about how terms like "Congress" and "major

legislation" were being used. Depending on how these terms were defined, different outcomes and answers to the questions might be possible. This aspect of disciplinary knowledge was likely a product of the tasks and documents used, although the acknowledgement of problem constraints, such as the definition of key terms used in the problem, is an aspect of disciplinary expertise found by Voss and Post (1988). Again, one unique aspect of the present study was the identification of what those constraints were for tasks related to American political science.

As was indicated above, there was some difficulty in determining which of these aspects could be categorized as experts' strategic processing. The act of placing a problem or a set of information into context could be considered strategic processing. However, I did not specifically observe the experts doing that in an effort to respond to the task questions; rather I observed them talking about the context, the importance of it, and the different types of context. As a result, I was not confident that I could claim to have observed their strategic processing as it pertains to context.

Additionally, the experts' use of sourcing (Wineburg, 1991) and their need for definitional precision could be considered evidence of their strategic processing, in particular their metacognitive self-regulation. When considering a piece of documentary evidence, the experts thought about whether they could trust the information and what else they would need to know about the source in order to make a determination about its reliability. If the author could be trusted, then they could use the information contained in the document to solve the problem. Likewise, as they read the questions and documents, the experts recognized what they could say for certain and what they could not based on their understanding of the terms used.

Both of these cases are examples of metacognitive processing. At the same time, they might be examples of cognitive processing as the experts determined whether or not the information contained in the documents could be used to answer the questions. In both cases, the experts were evaluating the documents and making judgments about them, but not necessarily in an effort to solve the problems posed in the tasks. I did not observe how they would use documentary evidence like what was presented to them to actually answer the main questions in the task. None of the experts actually used the information in the documents to answer the task questions. As a result, I do not believe that I was able to develop a complete picture of the experts' strategic processing because they did not use context, sourcing (Wineburg, 1991), and evidence to engage in solving the tasks.

Disciplinary Beliefs

Finally, I also investigated the disciplinary beliefs of the political science experts. According to Alexander and her colleagues (2009), experts tend to have specific beliefs about their disciplines and about how knowledge is acquired that impact how they organize information and approach their work. In the present study, the political scientists demonstrated this aspect of expertise when they shared their beliefs about the discipline and the acquisition of knowledge during the open-ended interview. Like many social and other sciences, political science follows the scientific method to systematically study phenomena and draw conclusions about those phenomena. However, the phenomena studied are particular to American political science. American political science is an inquiry-based study of human behavior and institutions related to the government, the exercise and distribution of power, and the allocation of resources. Knowledge is gained through the study of questions and problems of power and the allocation of resources as

they relate to the government, governmental actors, and governmental institutions. Thus, American political science is a distinct discipline focused on increasing knowledge related to the government using the scientific method and data and evidence to develop theories about how and why our government works as it does.

Differences in Expertise

The present study also revealed the differences between experts and non-experts that may be helpful for guiding students from novice understandings of civics and government toward more expert-like understandings. By including the students in the study, I was able to compare the experts to a group with less expertise. Doing so allowed me to see the influence of increased disciplinary knowledge on participants' beliefs about the discipline, organization of concepts from the discipline, and approach to problems in the discipline. While it was clear from the various tasks that the students possessed far less disciplinary knowledge compared to the experts, it was also evident that there were differences among the students and among the experts as well. Furthermore, it was evident that the students had some emerging disciplinary thinking skills and knowledge, which may have been a result of the introductory course in American government. The end result is the emergence of different levels of expertise in American political science and variations within those levels.

Limitations

There are several limitations to this study. First, the study cannot be used to generalize about the entire population of political scientists. With only a small number of political scientists from a few institutions of higher education as participants and a focus on one sub-field of political science (i.e., American government), it is impossible to make

claims about all political scientists. Similarly, with only four students, it is impossible to make claims about all students who have taken an undergraduate introductory political science course and about all political science novices. Therefore, the claims made above apply only to the experts and students who participated in the study.

Second, I made choices about what type of participants to include, which eliminates other potential participants who may have different expertise and knowledge. Some choices, such as the institutions of higher education from which to recruit experts and how many participants to include, are due to geographic or practical considerations. Other choices, such as to only include political scientists working in academia and students who have taken the appropriate course, are the result of considering my research questions and who is most likely to engage in the type of work that I am interested in studying. Thus, the results of my study may be different based on the choices I have made.

Additionally, the use of think-aloud protocols is not without its critics since these protocols only allow researchers to report what participants say about their thinking and not their actual cognitive processes (Chi, 2006). As a result, we cannot make claims about cognitive processes, only about what participants claim they are thinking. By demonstrating a think aloud and asking participants to practice one with unrelated material before beginning the political science task, I attempted to mitigate against the potential for participants' verbalized thoughts to be different than the ones they have internally or to be incomplete.

Finally, I created the tasks and gathered the information for the documents from various sources. I did not have the opportunity to observe the participants engaging in the

study of a problem of their choosing, which may have given me greater insight into the skills and processes they use while engaged in their work. It also became clear from the problem-solving task protocols that most of the experts would have preferred to collect their own evidence. As a result, the aspect of disciplinary thinking in political science that is least defined is strategic processing.

Still, despite these limitations, I was able to gather evidence related to the thinking and processing of the political scientists and to draw conclusions about their disciplinary knowledge. Future research will be helpful for gathering more information about American political science experts' disciplinary knowledge.

Implications for Research

The present study represents the beginning of empirical research into disciplinary knowledge related to civics and American government. Additional research is necessary to expand on what has been learned from this study and to better define strategic processing in American political science. As was indicated earlier, strategic processing is the least defined aspect of these political science experts' disciplinary knowledge. Rather than engaging directly in the problem-solving tasks, the experts discussed the tasks and how they would study the questions in the tasks. Their inclination was also to define the problems and context more precisely and to collect their own data rather than use what was presented. As a result, I have some information regarding their strategic processing, but it is incomplete. Future research might benefit from tasks that are more specific (e.g., asking about a particular government shutdown or the relationship between a specific president and Congress) in order to obviate the need to place the task into context. Additionally, allowing experts to engage in tasks of their own choosing might provide

more information about their strategic processing, although doing so would not allow for the type of comparisons across participants that was possible with the present study. However, a case study in which a future researcher observes one or two experts as they work on their own research might provide additional information about the strategic processing of the participants. Such a study might involve asking a political scientist to think aloud about the process of defining research questions and methods, as well as observing the political scientist as he or she collects and analyzes data. In this way, the researcher might be more likely to observe the political scientist engaging in the strategic processing that was identified, but not necessarily observed, in this study (e.g., the use of the scientific method, the analysis of data, etc.).

Another area in which more research would be helpful is student learning in civics and government. The current lack of empirical research into disciplinary knowledge in political science and government makes it more difficult to know what students need to learn about civics and government, what they should be able to do with that knowledge, and how they can demonstrate what they have learned. Before we can get to what students need to learn, however, we must have a better understanding of what they already know and understand about the discipline. NAEP (2010) scores and interviews have shown us what conceptual knowledge students have, what teaching methods are used in their classrooms, and what they think about civics and government courses and their future participation in government. Yet, we have not assessed the disciplinary knowledge of students across the continuum of expertise in political science. In order to make claims about what students know and need to learn, we need to fully develop a continuum so that it spans from novices to experts.

Research also needs to be conducted to determine if and what disciplinary thinking occurs now in civics and government classrooms, using the aspects of disciplinary thinking I have identified through this research. While studies like Niemi and Niemi's (2007) and those conducted by Gimpel and his colleagues (2003), Torney-Purta (2002) and her colleagues (2009), and others have described what occurs in civics and American government classrooms, they have not necessarily done so through the lens of disciplinary knowledge. In light of the findings of this study, observations of classroom practices and interviews with students and teachers can be analyzed for evidence of the types of disciplinary thinking and knowledge demonstrated by the experts. The presence or lack of such thinking in classrooms can then provide additional support for or against the inclusion of disciplinary thinking skills in civics and government curricula.

Additionally, research must be conducted in order to determine what types of teaching will move students along the continuum toward more expert-like thinking and what growth along this continuum looks like and involves. While it is important to know what disciplinary thinking looks like in American political science, it is also necessary to determine what types of teaching and learning experiences help students develop their knowledge and disciplinary thinking skills. Ultimately, the current study, along with additional research, can lead to the development of alternative curricula to the traditional ways of teaching civics and government, specifically curricula that challenge students, develop their higher order thinking, and combat boredom and disengagement.

However, in order for students to successfully develop disciplinary thinking skills and knowledge, teachers will also need to be prepared to teach those skills. Many teachers only take one course in political science, as was the case with the students in this

study, and some do not even take a course entirely devoted to government and political science. As a result, many teachers will likely not have disciplinary knowledge related to civics and American government, not to mention the knowledge of how to teach it. Therefore, researchers will also need to investigate how to prepare government teachers to help students develop disciplinary thinking skills and knowledge within the reality of teacher preparation programs that already have numerous requirements and little room for additional courses.

Implications for Teaching and Learning

The results of this study may also be used to identify new goals for teaching and learning in civics and American government courses focused on the development of disciplinary thinking and knowledge. This study reveals aspects of disciplinary knowledge and thinking skills, as well as disciplinary beliefs, used by experts to study American political science. This knowledge and skills include identifying problems and sub-problems in the discipline, organizing that knowledge around the core concepts of institutions and behavior, collecting and analyzing data to be used as evidence, understanding the impact of context and other problem constraints on the solution to the problem, and acknowledging that conclusions are only theories rather than definitive facts.

Curricula focused on these disciplinary skills and beliefs would be dramatically different than the curricula most American students currently are taught. Many classrooms focus on "the facts" of government such that students are asked to memorize information about the branches of government, the structures and functions of governmental institutions, the results of various court cases, and other conceptual

knowledge. They are not asked to analyze or apply that information, to investigate or solve problems, or to evaluate potential solutions to problems related to the government. For example, the current Maryland state curriculum in civics and American government is the Voluntary State Curriculum (VSC) (2006). Students, often in the tenth grade, take a course in national, state, and local government, often based on the VSC. The VSC has seven units: purposes, forms, and types of political and economic systems; foundations and principles of government and the Constitution; legislative branches; executive branches, judicial branches; domestic and foreign policy; and participation in government. There are also four content standards that help organize the material to be taught. These are: political science, peoples of the nation and world, geography, and economics. Of these, political science has the most material associated with it, including the foundations of the government, political participation, and protecting rights and maintaining order. Within each content standard, there are also objectives for student knowledge about the content. Most of the objectives begin with "describe," "explain," and "identify," while a few begin with analyze or evaluate. As with the NAEP assessment, the VSC focuses on basic information about the structures of the government and offers few opportunities for students to develop or express their own opinions.

In the past, students also completed the High School Assessment (HSA) once they completed the government course. The HSA was also similar to the NAEP assessment and followed the VSC's units and content standards. The entire test was composed of multiple-choice questions, for which students must find the one correct answer. Questions included factual information that students needed to recall and political cartoons, graphs, and charts for students to interpret. At one time, there were short answer

(known as brief constructed responses or BCRs) and essay (known as extended constructed responses or ECRs) questions on the assessment, but they were removed from the 2009 assessment. However, even in these questions, students were asked to recall and explain information rather than express opinions, take a position, or analyze and evaluate a position or public policy.

Additionally, although it is not a curriculum, the NAEP (2010) assessment in civics and government was designed to evaluate students' understanding of American democratic institutions and ideals. It is focused around three main components: students' knowledge about the government, their intellectual and participatory skills, and their civic dispositions. There are five content areas that comprise students' knowledge. These are: defining civics, politics, and government; the foundations of our political system; the purposes, values, and principles of American democracy; the United States' relationship to other nations; and the roles of citizens in a democracy. Also, there are three intellectual and participatory skills: identifying and describing, explaining and analyzing, and evaluating and defending a position. Finally, there are five civic dispositions on which students are assessed. These are: becoming independent, personal responsibility, respecting individual worth and dignity, informed participation, and the promotion of the healthy functioning of American democracy. These same content areas, skills, and dispositions are found in the National Standards for Civics and Government (1994) released by the Center for Civic Education. To assess students in these content areas, skills, and dispositions, the NAEP test uses a questionnaire and multiple-choice questions. The questions lean heavily on the structure of the government and offer

students few opportunities to express themselves or their ideas about government and politics (Niemi & Smith, 2001).

The VSC (2006), HSA, and NAEP (2010) assessment all focus on the accumulation of knowledge related to the government, but they do not require students to think critically or engage in higher order thinking skills. They organize concepts and topics in ways similar to the experts in this study, but they do not emphasize the relationships and connections between those concepts and topics. For example, students study units about elections and behaviors, as well as units about the various institutions within the government, such as the three branches. However, there is no recognition of how elections/behaviors and institutions interact and influence each other or how concepts, like representation, can be important in both elections and institutions and may provide a link between the two.

Also, students generally are asked to do very little with the information that they read or hear in class beyond memorize it and respond appropriately when asked about it. Students rarely are asked to produce knowledge by means such as synthesizing information from different but related topics, identifying and evaluating problems and solutions, and applying their knowledge to develop solutions of their own. Yet, that is what the experts in this study did with the information and conceptual knowledge they had. They considered two problems dealing with American government, identified what knowledge related to the problem they had (or did not have), synthesized information from their own prior knowledge (e.g., the importance of evidence, various research methods available to them, the need to determine the context, etc.) along with

information in the problem-solving tasks and the supporting documents, evaluated the

problems and documents, and suggested different ways to solve the problem.

In *The Civic Mission of Schools* (2003), and the successor report, *Guardian of*

Democracy: The Civic Mission of Schools (The Leonore Annenberg Institute for Civics

& the Campaign for the Civic Mission of Schools, 2011), the authors call for the teaching

of civics and government and the development of critical thinking skills through the

discussion of current events and controversial issues and through simulations of

democratic processes. These discussions and simulations might have the potential to

develop the critical thinking skills called for in both reports, but before we can know

what activities and teaching methods develop those skills, we need to know what those

skills are within the discipline. Once we know what those skills are, we can then begin to

research what teaching methods will help students develop those skills and become more

expert in them. The consideration of problems related to the government through

discussion and simulations is one way that teachers may be able to guide students in the

development of disciplinary thinking skills in American political science and

government. However, there may be other ways as well.

In order to develop disciplinary thinking, students and teachers would need to see

the relationships that exist between the various concepts in the discipline. While the

discipline is divided into elections/behavior and institutions, it is important for students to

understand that there are concepts that exist in both subfields and some that connect the

two as well. Also, students would be engaged in identifying problems related to the

government, power, and the distribution of resources. They would investigate those

problems by learning about how others have attempted to solve the problems and then

evaluate those solutions. Students might also have the opportunity to collect and analyze data as evidence to support their conclusions about those problems. Rather than passively receiving information about the government, students would actively engage in the creation and evaluation of knowledge about the government, power, and the allocation of resources. In this way, they could consider current events and controversial issues, while attempting to develop potential solutions to those issues. They would also be able to participate in simulations of the democratic process, but also of the processes of those who study democracy and American government. Also, assessments of their work would need to pivot from existing multiple choice and short answer questions based on factual information to projects, portfolios, research reports, and other assessments in which students could demonstrate their knowledge about the government and about the process of studying the government. Students' thinking and how they came to their conclusions about problems related to our government would be the focus of assessments so that teachers could assess students' critical thinking and knowledge.

Conclusion

With continued calls from educators, policy makers, and organizations dedicated to increasing civic knowledge and engagement, like the Center for Civic Engagement, to develop a civics and government curriculum focused on critical thinking skills, it is important to understand what those skills are and how they are used in the discipline. The current study provides some insight into the knowledge and skills that experts in American political science possess and use in their work. It may be possible, then, to develop a curriculum for civics and government courses that use the disciplinary knowledge and skills described here to increase students' learning and engagement and

foster the critical thinking skills called for by experts in the field of social studies

education.

Appendix A – Recruitment Emails

Section 1: Email to Pilot Study Participants

Dear X,

Earlier this year you participated in a pilot study of my doctoral dissertation study. Thank you again for your participation. I learned a great deal from you regarding the discipline of political science and the type of work that political scientists do.

I am writing today to ask for your assistance with recruiting political scientists for participation in my dissertation study. I was hoping that you might be able to suggest some faculty members in the Political Science department at your school whose main area of research is in American government and whom you think would be willing to participate in my study.

Below is a brief description of the study and its significance in the field of education. Please share this information with faculty members at your school who might be interested in participating. It would also be helpful if you copied me when forwarding this message to potential participants. Please contact me if you have any questions or suggestions for participants. I can be reached at 202-297-5158 or by email at cbudano@umd.edu.

Thank you again for your assistance with my study. I look forward to hearing from you soon.

Sincerely,

Christopher Budano

Project Description: Numerous studies about the nature of expertise in history have led to a revolution in our understanding of the discipline, how students learn history, and how best to teach it. My study is an initial attempt to learn about the nature of expertise in political science. With knowledge about expertise in political science, researchers will then be able to learn more about the discipline and how students learn it, as well as press for improvements in curriculum and instruction. I am looking for experts in American political science to participate in one 60 to 90 minute interview. Participants' responses will remain confidential.

Section 2: Email to Potential Participants

Dear Y,

My name is Christopher Budano, and I am a doctoral candidate in the College of Education at the University of Maryland. I am contacting you to ask your participation in a study of expertise in political science (include the name of individual who suggested this participant, if applicable, e.g. X suggested that I contact you given your expertise in political science).

My study is a result of my interest in Social Studies curriculum and instruction in public schools, particularly in the areas of history and government, and a desire to better understand the nature of expertise in political science. Numerous studies about the nature of expertise in history have led to a revolution in our understanding of the discipline, how students learn history, and how best to teach it. My study is an initial attempt to learn about the nature of expertise in political science. With knowledge about expertise in political science, researchers will then be able to learn more about the discipline and how students learn it, as well as press for improvements in curriculum and instruction. I am looking for experts in American political science to participate in one 60 to 90 minute interview. Participants' responses will remain confidential.

Please contact me if you have any questions and if you are interested in participating in this study. I can be reached at 202-297-5158 or by email at cbudano@umd.edu.

Thank you for your time and consideration. I look forward to hearing from you soon.

Sincerely,

Christopher Budano

Appendix B – Dissertation Problem-Solving Task and Interview Protocol

"Thank you for agreeing to meet with me today. Our session today will consist of two parts: two problem-solving tasks followed by interview questions. During the problem-solving tasks, I will give you a task and ask you to think aloud while you attempt to answer a question or solve a problem related to the task. This will help me get a sense of how you think about different aspects of political science. The interview is designed to help me understand the nature of expertise in political science, and therefore I will be asking you questions about your thinking about political science, your learning in political science, and aspects of your work. With your permission, I will be recording our discussion to assist me as I attempt to understand how you think about political science. You may decline to answer any question and end the session at any point without consequence. Do you have any questions before we begin?"

Answer any questions.

"Now we are going to begin the problem-solving tasks. I will present you with a task and ask you to think aloud as you consider the task and answer the question or solve the problem. We will practice thinking aloud first and then I will share the tasks with you. There are two tasks. Afterwards, I will ask you a few follow-up questions about the experience of working with these tasks. Do you have any questions?"

Answer any questions.

Go over Think-Aloud Guidelines.

Section 1: Think-Aloud Guidelines

1. Say whatever's on your mind. Don't hold back hunches, guesses, wild ideas, images, intentions.

2. Speak as continuously as possible. Say something at least once every five seconds, even if only, "I'm drawing a blank."

3. Speak audibly.

4. Don't worry about complete sentences and eloquence.

5. Don't over-explain or justify. Analyze no more than you would normally.

6. Get into the pattern of saying what you're thinking now, not of thinking for a while and then describing your thoughts.

D.N. Perkins, *The Mind's Best Work.* 1981.

"Now we are going to practice the think aloud. I will read the first part and think aloud, and then I will ask you to read the second part and think aloud."

Model think aloud and then practice think aloud using the article below. Ask if the participant has any questions, and answer any questions.

Section 2: Think-Aloud Practice

Miss Manners: A history of flatware
Wednesday, October 27, 2010; C07

Dear Miss Manners:

Could you tell me if it would be considered okay to cut your steak with a fork?

Certainly, but would you please first tell Miss Manners where it is possible to find steak tender enough to be cut with a fork?

Weird as it may seem, there is a complicated historical hierarchy that applies to flatware. Even more oddly, it is not the oldest implement that is most respected.

Lowest rank goes to the spoon, presumably -- in the form of some sort of scoop -- the oldest means of eating other than the fingers. Next comes the knife, which was, for centuries, used both to spear and to eat. Yes, the same individual knives, ick.

Then along came the fork, from Constantinople to Italy in the 12th century, and from Italy to France in the 16th century. The English were particularly slow in taking it up, and the world was well into the 19th century before it became universal there.

But then the fork became the instrument of choice in the Western world, which it has remained.

At that point, the hierarchy goes into reverse. Those specialized items that were made in Victorian times (and still scare people, although they -- the items, not the people -- were long since melted down for their silver content) were rather sniffed at when they appeared.

So you had the following bizarre situation among the fastidious:

Whole fish on plate. High crime to use knife to fillet it because knives are intended for meat. But the darn thing is full of tiny bones. Fish knives invented, featuring clever little notch at tip for lifting the flesh from the bone. No, can't use that, too new. We believe in the fork above all.

Solution: Serve two forks for each plate of fish, to be used to pry the flesh in opposite directions with object of uncovering bones.

Personally, Miss Manners got tired of that silly spectacle and accepted the fish knife, the law against using a meat knife on fish being still on the books.

But you see the point -- well, maybe not the point, but the fact -- of the fork's paramount position. So if you can eat steak with a fork, even if you have a meat knife at your disposal, you will win the admiration of anyone versed in flatware history.

Once the participant has finished thinking aloud with the article, ask if he or she has any questions. Answer any questions.

Section 3: Concept Sorting and Mapping Task

I am going to ask you to complete a concept sorting and mapping task. Concept sorting and mapping tasks can show how you organize information and think about political science. I will also ask you some questions about how you organize the cards.

The cards have words, phrases, and topics related to political science written on them. I will give you the cards and ask you to organize them in a way that makes sense to you. Once you have organized the cards, I will ask you to attach them to the chart paper with tape. You can then label the groupings and draw arrows between them in a way that makes sense to you.

You do not need to use all of the cards. There are also additional cards for you to add words, phrases, and topics related to government and political science that you think are missing but are necessary for you to think about and organize the cards. You may take as much time as you need.

As you are sorting, please talk about what you are thinking and the choices you are making.

Do you have any questions?" (*Respond to questions or concerns.*)

Hand cards to the participant (see Table 7 for complete list of words). Place chart paper, extra cards, and writing utensil on table.

During concept sorting and mapping, prompt the participant to talk-aloud about what they are thinking. If the participant points to a card without naming it, say the name of the card for audio recording purposes.

Once the participant has finished sorting the cards, prompt him or her to tape the cards onto the chart paper.

"Now that you have sorted the cards, please discuss and label the groupings and draw lines that make connections between the cards in a way that makes sense to you and shows how you think about government and political science. Please talk about what you are thinking as you do this."

Ask the participant to explain how they have sorted, labeled, and connected the cards if he or she has not already done so. Ask any questions to clarify the sorting, labeling, and/or connecting the participant has done.

"Thank you."

Table 17

Concept Sorting and Mapping Task Words

Committee	Mobilization	Election	Decision-making
Representation	Participation	Incumbent	Challenger
Political Party	Campaign	Federalism	Executive
Legislative	Judicial	Liberal	Conservative
Direct Democracy	Ideology	Mass Media	Institution
Public Policy	Politics	Public Opinion	Partisan
Minority Party	Majority Party		

Section 4: Task 1

"Now we are going to move to the problem-solving tasks. Here is the first problem-solving task. You may write on the paper if you wish, but please share all of your thinking verbally as well."

Hand paper with task written on it to participant. Ask participant to read it aloud and think aloud as he or she reads and works on the problem. If the participants goes for periods without speaking, I will prompt him/her with phrases such as, "Please share what you are thinking right now."

Major Legislation task: How does the control of Congress, in terms of which party holds the majority, impact the passage of major legislation that the president supports? How would you study such a question?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it? And what would you look for?"

After the participant answers, present the participant with data (see Appendix C for data to be presented).

Ask:
1) Please think aloud as you review the data and share your thinking about the information.
2) Which of this data is most useful to you in considering this problem? Why?
3) Which of this data is least useful to you in considering this problem? Why?
4) What other data would you want to consult when considering this problem? Why?"

Section 5: Task 2

"Here is the second problem-solving task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and think aloud as he or she works on the problem.

Government Shutdown task: Whom do voters blame when there is a federal government shut down? Why? What would be the political impact of a government shutdown due to disagreements over the federal budget? How would you study such a question?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it? And what would you look for?"

After the participant answers, present the participant with data (see Appendix C for data to be presented).

Ask:
1) Please think aloud as you review the data and share your thinking about the information.
2) Which of this data is most useful to you in considering this problem? Why?
3) Which of this data is least useful to you in considering this problem? Why?
4) What other data would you want to consult when considering this problem? Why?"

Thank you."

Section 6: Interview Protocol

"Now, I would like to ask you a few questions about your work as a political scientist.

1) How would you define political science?

      a. What has led you to that definition?

      b. What is the goal of political science?

      c. How do you and others achieve the goal?

2) What topics in political science are you most interested in?

      a. Did you do any research related to those topics during your graduate program?

      b. Are you currently doing any research related to those topics?

      c. Are you conducting any research related to other topics in political science? If

      so, what topics? Why are you researching these topics?

3) What research methods do you use in your work?

      a. Where did you learn those methods?

      b. What types of data can you collect and/or use in your work?

      c. What can you do with the information that you gather from your research?

4) Is there anything else you think I should know about political science that I have not asked?

Thank you for answering my questions."

Appendix C – Data for Dissertation Problem-Solving Tasks

Section 1: Task 1 Data

Table 18

Document A: Control of Congress by Party

Congress	Years	Majority Party
103	1993-1995	Democrat
104	1995-1997	Republican
105	1997-1999	Republican
106	1999-2001	Republican
107	2001-2003	Republican
108	2003-2005	Republican
109	2005-2007	Republican
110	2007-2009	Democrat

Source: Woolley, J., & Peters, G. The American Presidency Project. Retrieved 20 July

2011 from http://www.presidency.ucsb.edu/index.php.

Table 19

Document B: Major Legislation Proposed and/or Enacted During the Administration of

President Bill Clinton

Major Legislation	Year	Clinton's Position	Result
Reform healthcare system	1993	Proposed	No bill passed in Congress.
End the ban on openly gay and lesbian individuals serving in the military	1993	Proposed	Congress passed the "Don't ask, don't tell policy," which does not end the ban but allows gay and lesbian service members to serve if they do not reveal their sexual orientation. Signed by Clinton.
North American Free Trade Agreement (NAFTA)	1993	Supported with additional protections for American workers	Passed by Congress. Signed by Clinton.
Family and Medical Leave Act (FMLA)	1993	Proposed	Congress passed the bill; Clinton signed it.
Defense of Marriage Act (DOMA)	1996	Did not oppose	Congress passed the bill; Clinton signed it.
Personal Responsibility and Work Opportunity Reconciliation Act	1996	Supported welfare reform.	Congress passed the bill; Clinton signed it.

Sources: The Library of Congress. Various roll call votes. Retrieved 20 July 2011 from

http://thomas.loc.gov/home/rollcallvotes.html.

Woolley, J., & Peters, G. The American Presidency Project. Retrieved 20 July 2011 from

http://www.presidency.ucsb.edu/index.php.

Table 20

Document C: Major Legislation Proposed and/or Enacted During the Administration of

President George W. Bush

Major Legislation	Year	Bush's Position	Result
USA Patriot Act	2001	Proposed	Congress passed the bill; Bush signed it.
No Child Left Behind Act (NCLB)	2001	Proposed	Congress passed the bill; Bush signed it.
Tax Cuts	2001, 2003	Proposed	Congress passed the cuts; Bush signed both bill cutting taxes.
Partial Privatization of Social Security	2001, 2005	Proposed	No bill passed in Congress.
Medicare Part D	2003	Proposed	Congress passed the bill; Bush signed it.
Federal Marriage Amendment	2006	Supported	Defeated in both Houses of Congress.

Sources: The Library of Congress. Retrieved 20 July 2011 from

http://thomas.loc.gov/home/rollcallvotes.html.

Woolley, J., & Peters, G. The American Presidency Project. Retrieved 20 July 2011 from

http://www.presidency.ucsb.edu/index.php.

Table 21

Document D: Vote Concurrence (the percentage of times that the majority of members of

Congress voted with the president's position on roll call votes. Data was not available for

2007 and 2008.)

Year	Vote Concurrence
1993	86%
1994	86%
1995	36%
1996	55%
1997	54%
1998	51%
1999	38%
2000	55%
2001	87%
2002	88%
2003	79%
2004	73%
2005	78%
2006	81%

Source: Woolley, J., & Peters, G. The American Presidency Project. Retrieved 20 July

2011 from http://www.presidency.ucsb.edu/index.php.

Document E: Abstract from Copeland's Study

This study considers the major explanations for the use of the veto by utilizing multivariate time-series analysis. It concludes that many explanations found in the conventional wisdom are overrated or inaccurate. But it also shows that a few variables can explain one-half to two-thirds of the variation in the use of the veto from year-to-year. Among the most influential determinants of the use of the veto are the scope of government, opposition control of Congress, and whether the president has had a veto overridden. Among the most overrated explanations are that international crises limit the use of the veto, and that Democrats use the veto more than Republicans.

Copeland, G. W. (1983). When Congress and the president collide: Why presidents veto legislation. The Journal of Politics, 45, pp. 696-710.

Document F: Abstract from Edwards, Barrett, and Peake's Study

The best test of the impact of divided government on legislative gridlock is to examine seriously considered, potentially important legislation that failed to pass under conditions of divided and unified government. To do so requires separate analyses of legislation the president opposes and supports. Divided government will be associated with the president opposing more legislation and with more legislation the president opposes failing to pass. It will not be associated with the president supporting less legislation or with more legislation the president supports failing to pass. Important legislation is more likely to fail to pass under divided government. We used regression analysis of the failure of legislation to pass and the relative success of legislation over the 1947-92 period. Presidents oppose significant legislation more often under divided government, and much more important legislation fails to pass under divided government than under unified government. Furthermore, the odds of important legislation failing to pass are considerably greater under divided government. However, there seems to be no relationship between divided government and the amount of significant legislation the administration supports or that passes.

Edwards, G. C., Barrett, A., & Peake, J. (1997). The legislative impact of divided government. *American Journal of Political Science, 41*(2), pp. 545-563.

Section 2: Task 2 Data

In November 1995 and late December 1995 to early January 1996, the federal

government shut down twice due to the failure of Congress and President Clinton to

agree on a spending bill. During and after the shutdown, several public opinion polling

firms and media outlets sought to determine whom the American public blamed for the

shutdown. In early 2011, it appeared that there might be another shutdown of the federal

government, as President Obama and Congress attempted to agree on a spending bill.

Again, media outlets and polling firms sought to find out whom the public would blame

if a shutdown occurred.

Table 22

Document G: Voter Blame for Government Shutdown: 1995

Dates of Poll	Polling Firm/Media Outlet	Percentage of Voters Who Blame Republicans in Congress	Percentage of Voters Who Blame President Clinton	Percentage of Voters Who Blame Both
11/14/95	CNN/USA Today/Gallup	49%	26%	19%
11/17-18/95	CNN/USA Today/Gallup	47%	25%	21%
11/19/95	ABC News/The Washington Post	51%	24%	20%
11/19/95	CBS News	51%	28%	15%
11/19/95	NBC News/Wall Street Journal	47%	27%	20%

Table 23

Document H: Voter Blame for Government Shutdown: 2011

Dates of Poll	Polling Firm/Media Outlet	Percentage of Voters Who Blame Republicans in Congress	Percentage of Voters Who Blame President Obama	Percentage of Voters Who Blame Both
2/24-27/11	The Washington Post/Pew Research Center	36%	35%	17%
3/30-4/4/11	Pew Research Center	39%	36%	16%
3/31-4/4/11	NBC News/The Washington Post	37%	20%	17%

Sources: Blumenthal, M. Government shutdown: Polls show voters blamed GOP for

1995 crisis. Retrieved 20 July 2011 from

http://www.huffingtonpost.com/2011/03/30/voters-blamed-gop-for-1995-

shutdown_n_842769.html.

Sussman, D. Poll: More Democrats than Republicans favor compromise on budget.

Retrieved 20 July 2011 from http://thecaucus.blogs.nytimes.com/2011/04/04/poll-more-

democrats-than-republicans-favor-compromise-on-

budget/?scp=3&sq=dalia%20sussman&st=cse.

Thee-Brenan, M. Poll: Blame for government shutdown will get spread around. Retrieved

20 July 2011 from http://thecaucus.blogs.nytimes.com/2011/04/06/poll-blame-for-a-

government-shutdown-will-get-spread-around/.

Document I: Segment from Williams and Jubbs' Study

With no apparent solution in sight, problems with the budget were attracting more and

more media attention and also bringing about a change in public opinion. In a USA

Today/CNN/Gallup poll conducted at the beginning and the end of the second

government shutdown respondents were asked 'Who has acted most responsibly- Clinton

or the Republican leaders in Congress?'

	15-18 December 1995	5-7 January 1996
Clinton	48%	38%
Republicans	34%	37%
No difference	10%	17%
No opinion	2%	8%

President Clinton's actions in blocking proposed Republican cuts initially gained him

relatively high levels of public support. However, by the end of the second shutdown

public opinion had shifted; the Republicans gained a little support, but the majority of the

opinion shift was to the view that the Republicans and President Clinton shared equal

responsibility for the shutdown of government and the continued failure to bring some

form of resolution to the conflict. …Opinion poll data suggests that while the public

largely blames the Congress for precipitating the shutdown of government, it is inclined

to share responsibility with the President for failing to resolve the budget impasse. During

December 1995, President Clinton could 'hang tough' in negotiations with Congress

because he enjoyed a broad measure of public support, but by January 1996 public

impatience with shutdown had grown and President Clinton was forced to take a more

conciliatory tone.

Williams, R., & Jubb, E. (1996). Shutting down the government: Budget crises in the American political system. *Parliamentary Affairs, 49*(3), pp. 471-484.

Document J: Segment from Meyers' Study

The broader political impact of the shutdown was that it stopped the "Republican revolution" in its tracks. Voters often have trouble determining which elected officials are responsible for legislative problems. But polls show that the public clearly attributed blame, rightly or wrongly, to the Republicans in this case. Some Republicans accepted it – especially moderates, who did so on behalf of their party's conservatives. The party became much more accommodating towards President Clinton during the rest of the 104th Congress; this attitude was reinforced by Clinton's overwhelming victory in the 1996 election and the narrowing of the Republican's House majority.

Meyers, R. T. (1997), Late appropriations and government shutdowns: Frequency, causes, consequences, and remedies. *Public Budgeting and Finance, 17*(3), pp. 25-38.

Document K: Washington Post News Story

Poll: Blame for possible government shutdown is divided
By Jon Cohen and Paul Kane, Washington Post Staff Writers

Tuesday, March 1, 2011; A03

Americans are divided over who would be to blame for a potential government shutdown, with large numbers saying Republicans and President Obama are playing politics with the issue, according to a new Washington Post poll.

Thirty-six percent say Republicans would be at fault if the two sides cannot reach a budget deal in time to avert a temporary stoppage of government services, and just about as many, 35 percent, say primary responsibility would rest with the Obama administration. Nearly one in five say the two camps would be equally culpable.

Obama and congressional leaders are on the verge of passing an interim spending bill to keep federal agencies open through March 18, giving themselves an extra two weeks to try to craft a longer-term bill that would fund the government for the remainder of fiscal 2011. The poll results suggest that neither side would likely have much to gain politically in the near term from allowing the government to close.

The new numbers contrast with a Post-ABC poll taken just before the brief November 1995 shutdown, which was followed by a three-week closure of many agencies. There are similarities between then and now: In both cases, a new Republican-led Congress clashed with a Democratic president who was in the second half of his first term.

But in 1995, when Bill Clinton was president, 46 percent said they would blame House Speaker Newt Gingrich and congressional Republicans for the impending stoppage, compared with 27 percent who said Clinton would be at fault.

If there is a government shutdown, the decisive group to watch would be independent voters, who form the bulk of those who said they had not decided who would be to blame. On the question of blame, conducted jointly by The Post and the Pew Research Center, about three-quarters of conservative Republicans fault Obama; a similar proportion of liberal Democrats blame the GOP. Independents tilt marginally toward blaming Obama, 37 to 32 percent. […]

Like Clinton did in 1995, Obama has an edge over the GOP when it comes to public assessments about whether each side is making a real effort to keep the government open. A third of all Americans say Republicans are trying to resolve the budget battle. For Obama, that number is 10 percentage points higher. Still, 50 percent say the president is just playing politics; 59 percent say so of the GOP.

Democrats and Republicans alike overwhelmingly see the other side as not working to

resolve the budget impasse. Among independents, 63 percent say the Republicans are politicking the issue, and a similarly large percentage, 61 percent, say the same about Obama.

The telephone poll was conducted Feb. 24 to 27 among a random national sample of 1,009 adults. The margin of sampling error is plus or minus 3.5 percentage points.

Retrieved 20 July 2011 from http://www.washingtonpost.com/wp-dyn/content/article/2011/02/28/AR2011022806091_pf.html

Document L: The Washington Times News Story

Budget deadlock points to government shutdown: Fiscal panelists pan Obama plan

By Kara Rowland, The Washington Times

Sunday, February 20, 2011

Members of both parties in Congress said they want to avoid a government shutdown but remained at an impasse Sunday as Republicans insisted on cuts in any stopgap spending measure while Democrats said that would threaten the economic recovery.

Meanwhile, in the long-term budget fight, the two leaders of the fiscal commission that President Obama created last year said the blueprint he submitted to Congress last week lacks the kinds of cuts the government will need if it is to get its fiscal affairs in order.

House Republicans this weekend approved a funding bill that cuts 2011 spending levels by $61 billion compared with 2010, but the measure now goes to the Senate, where majority Democrats oppose it. Mr. Obama has promised to use his veto pen if the legislation reaches his desk. That leaves both sides playing a game of chicken before March 4, when the current funding bill expires.

"We are not going to accept these extremely high levels of spending," House Budget Committee Chairman Paul D. Ryan said on CBS' "Face the Nation."

The Wisconsin Republican said his party is "not looking for a government shutdown" and predicted that Congress would agree to a short-term extension. But House Republicans, led by Speaker John A. Boehner of Ohio, have ruled out even a short-term spending extension without accompanying cuts.

Democrats have said deep cuts now would hurt the economy and sought to pin a threatened government shutdown on Republicans, even though they control the Senate and the White House.

"Speaker Boehner is on a course, I think, that would lead to a shutdown," Sen. Charles E. Schumer, New York Democrat, said on CNN's "State of the Union" program. "That's reckless. It would hurt the American people, jobs and the economy, and I'd hope he'd reconsider."

Mr. Schumer compared Mr. Boehner to former Speaker Newt Gingrich, who was largely blamed for the government shutdown in 1995 when the GOP-controlled Congress and President Clinton failed to reach an agreement on spending cuts.

Congressional Democrats have insisted that they are open to cuts this year but haven't provided specifics.

"Democrats in the Senate and, I think, the White House, are committed to making cuts," Sen. Claire McCaskill, Missouri Democrat, said on "Fox News Sunday." "The question is, what are the priorities here?"

Asked by host Chris Wallace how much she is willing to cut, Ms. McCaskill said she disagrees with the House bill's cuts to education and border security and that she would look to cut tax subsidies for oil companies.

Sen. Tom Coburn, Oklahoma Republican, said he doubts either side wants a shutdown.

"It's good for political rhetoric to talk about a government shutdown, but I don't know anybody who wants that to happen," he said on Fox.

Mr. Coburn said lawmakers will make cuts one way or another. "We're either going to make them or we're going to be told to make them by the people that own our bonds," he said.

Beyond the specter of a government shutdown, both sides continued to clash over the broader spending picture.

Republicans faulted Mr. Obama for not going far enough in his $3.7 trillion 2012 budget proposal to rein in near-term deficits and long-term debt. Democrats defended the plan as a solid first step.

The blueprint, which the president sent to Congress on Feb. 14, calls for a five-year freeze on non-security discretionary spending, reducing the projected deficit an estimated $400 billion over the next decade. Mr. Obama said it makes "tough decisions" by trimming popular government programs including Pell Grants and heating assistance for the poor, but he attracted criticism for not addressing entitlement programs, which are the biggest drivers of long-term federal deficits.

Mr. Ryan on Sunday promised that the Republican budget would tackle entitlements and lead where Mr. Obama "chose not to," but he didn't offer additional details on the plan.

In a potentially embarrassing moment for the White House on Sunday, the bipartisan co-chairmen of the fiscal panel that Mr. Obama created criticized his budget in a Washington Post opinion column.

"To be sure, the president's budget doesn't go nearly far enough in addressing the nation's

fiscal challenges. In fact, it goes nowhere close," wrote Clinton White House Chief of Staff Erskine Bowles and former Sen. Alan Simpson, Wyoming Republican.

A majority of the panel's 18 members approved a sweeping austerity plan in December, but it failed to garner enough votes for automatic congressional consideration. Through a mixture of tax hikes and spending cuts, the proposal called for reducing the projected deficit by $4 trillion over 10 years.

Retrieved July 27, 2011 from http://www.washingtontimes.com/news/2011/feb/20/dems-gop-still-loggerheads-over-budget-cuts/.

Appendix D – Concept Sorts and Maps by Experts and Students
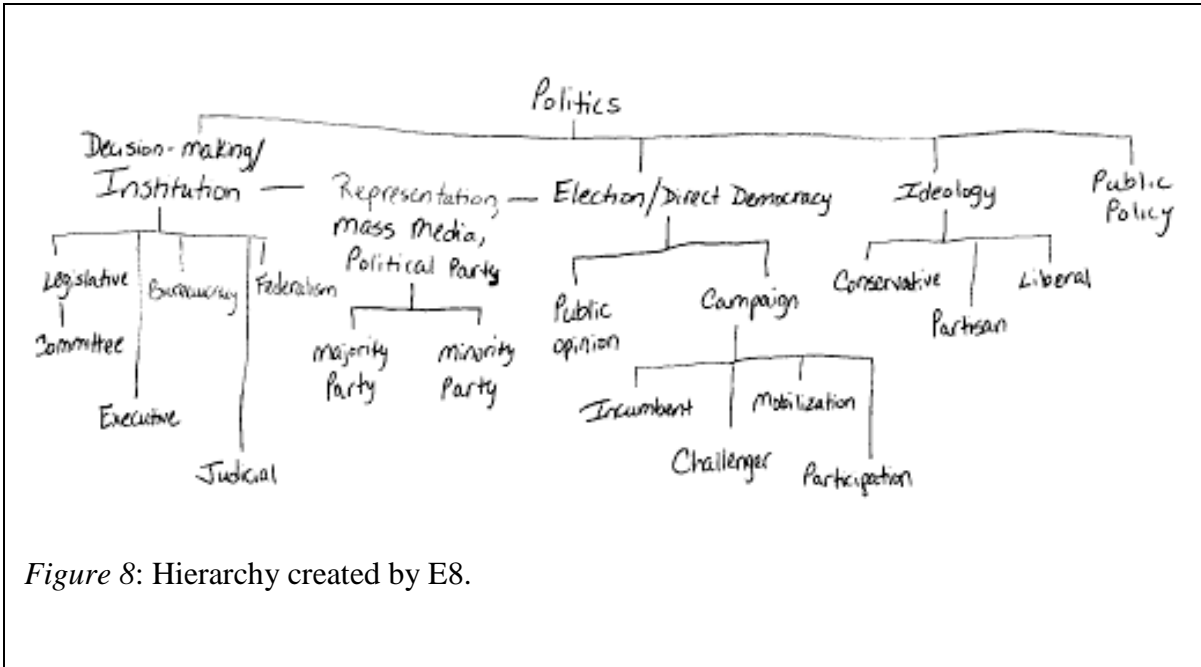
Figure 8: Hierarchy created by E8.
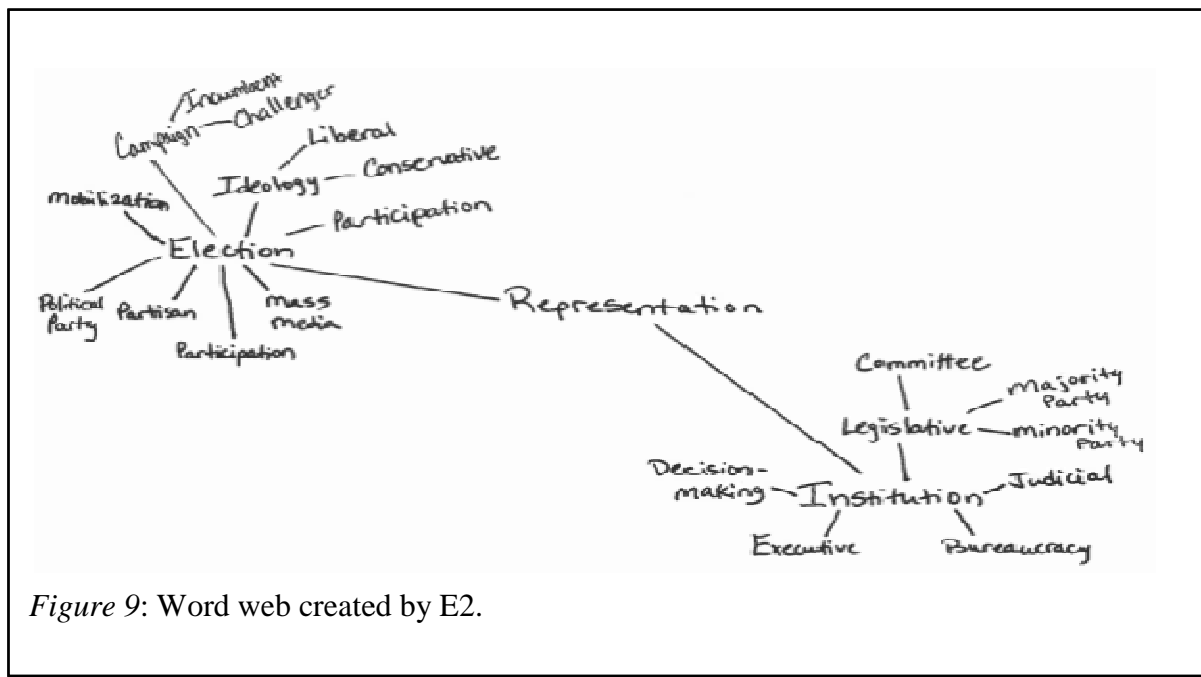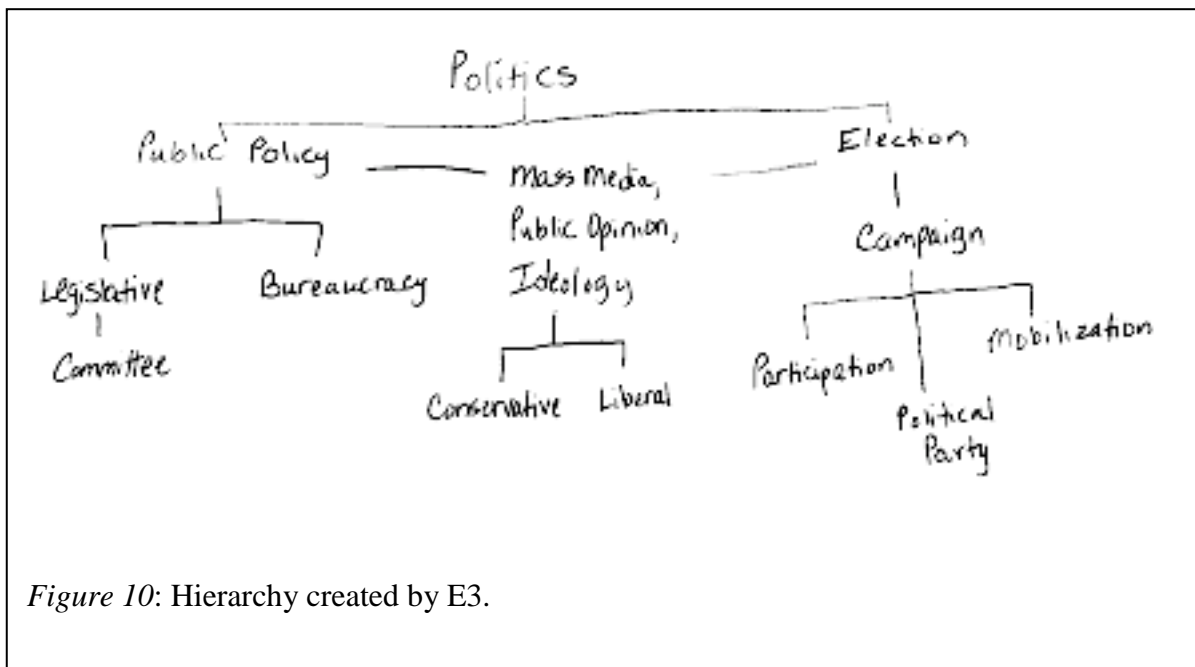

Figure 9: Word web created by E2.

Figure 10: Hierarchy created by E3.

Figure 11: Hierarchy created by E4.
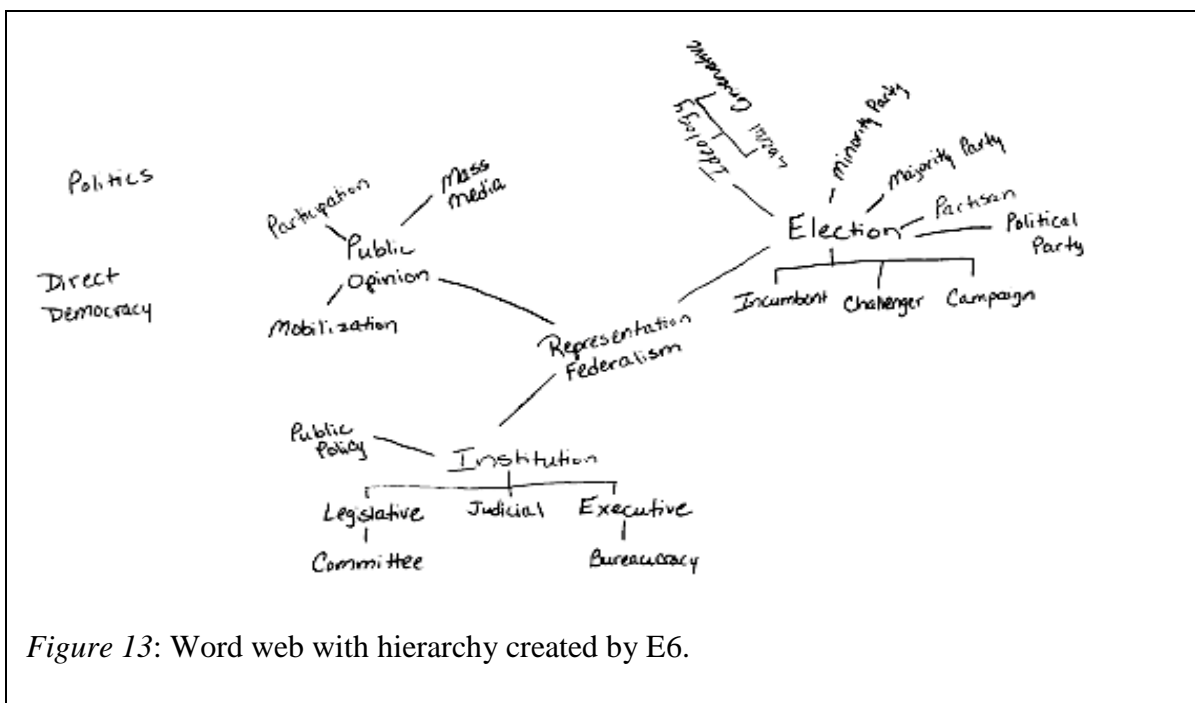
Figure 12. Piles created by E5.

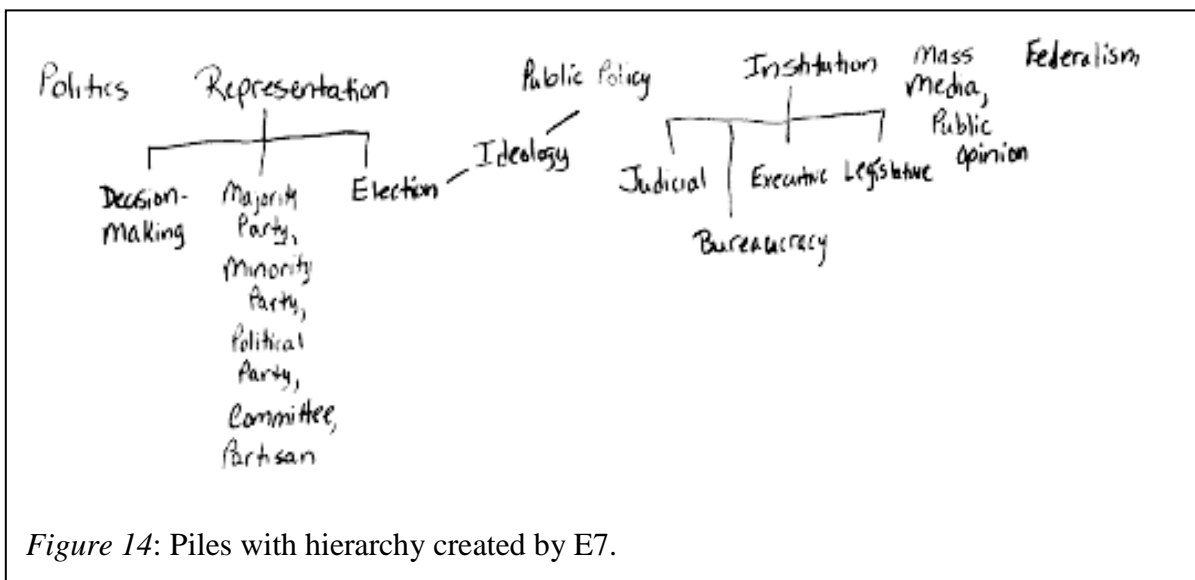*Figure 13*: Word web with hierarchy created by E6.

Figure 14: Piles with hierarchy created by E7.
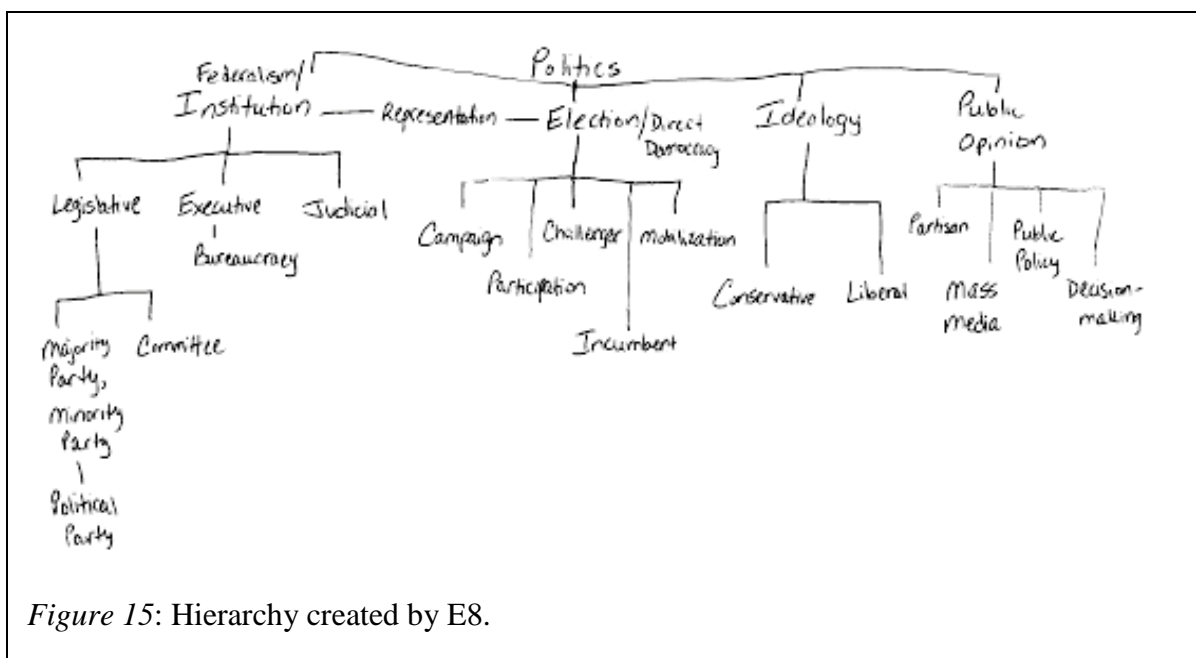

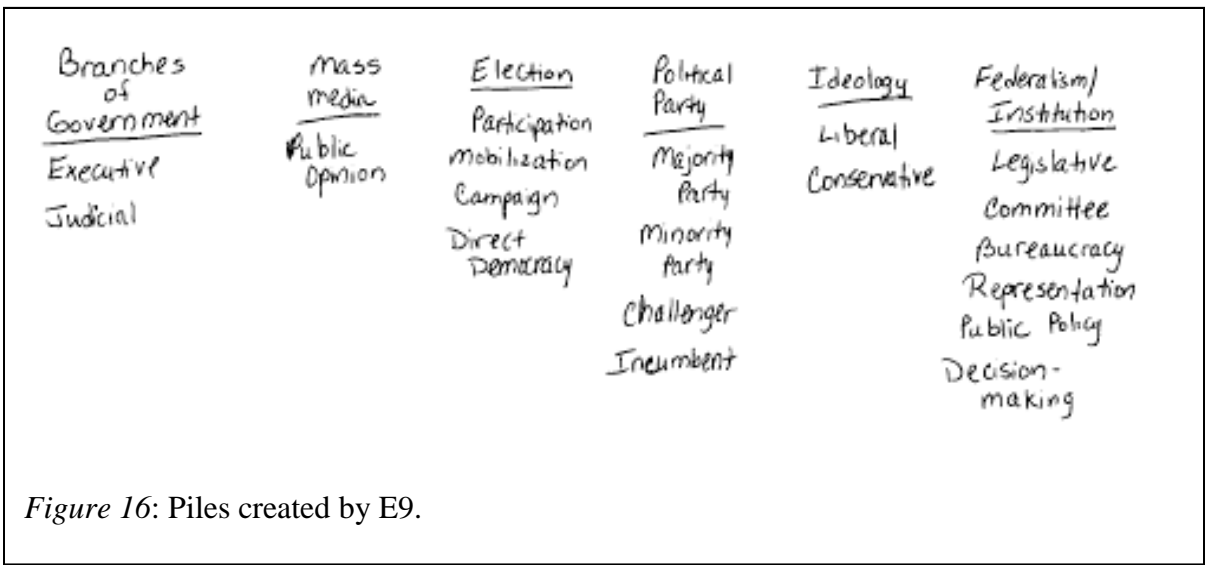*Figure 15*: Hierarchy created by E8.
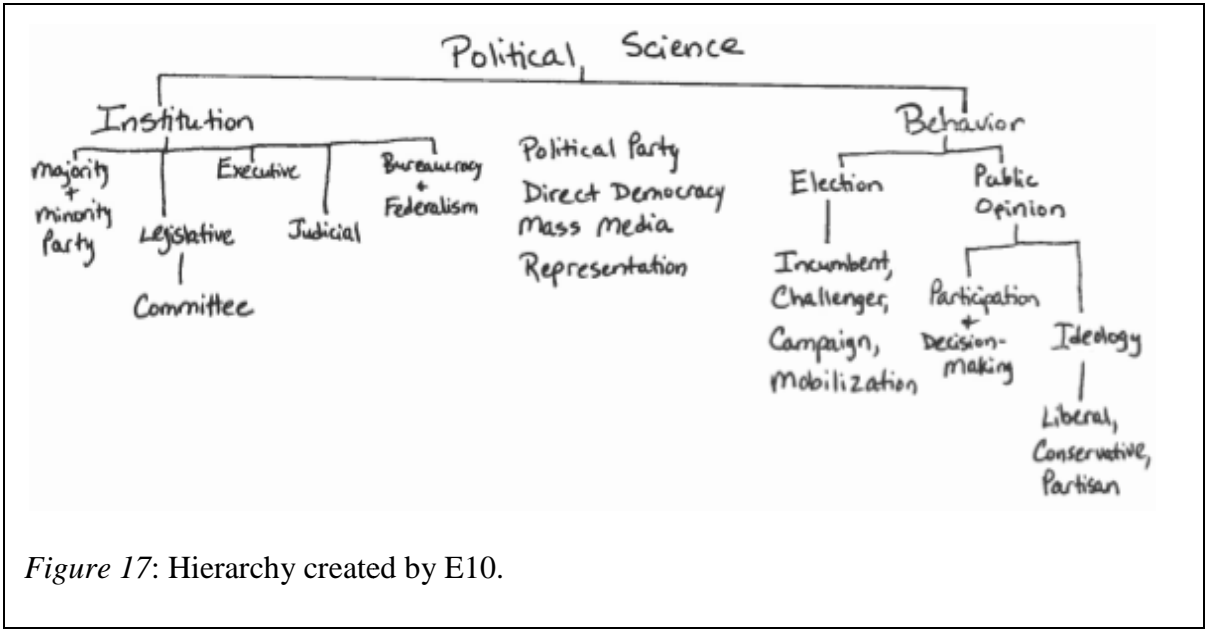
Figure 16: Piles created by E9.

Figure 17: Hierarchy created by E10.
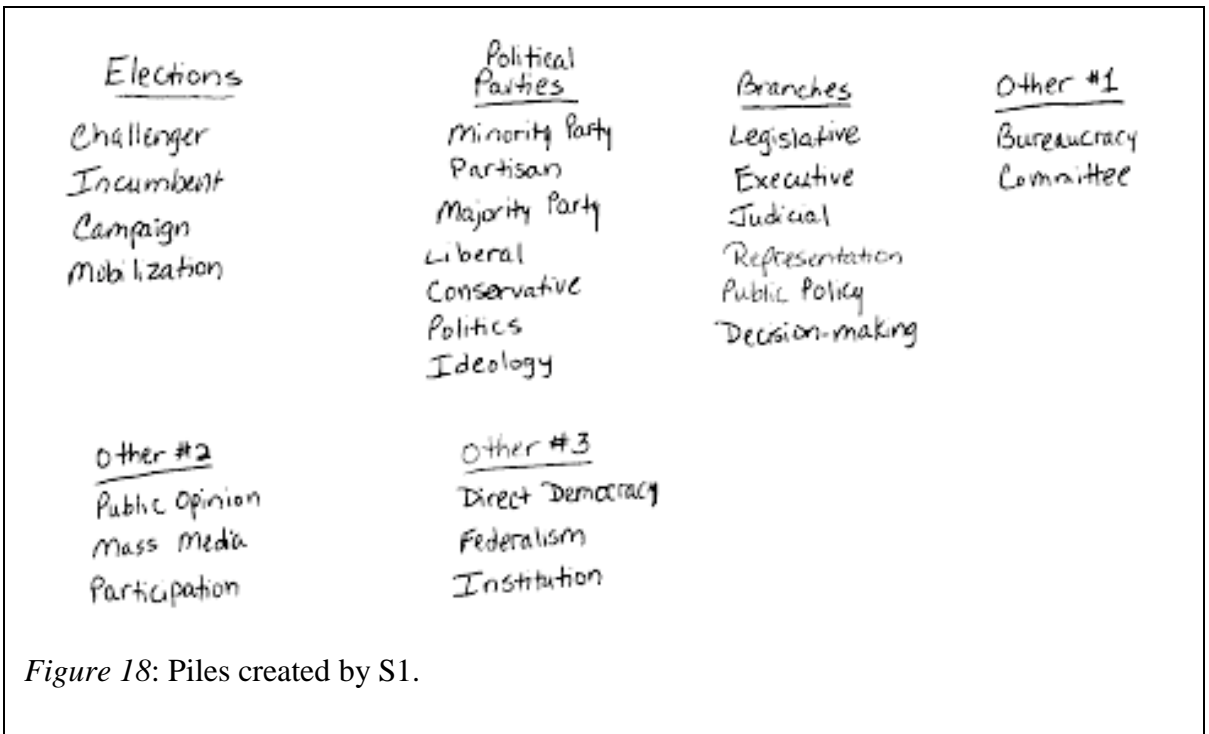
Figure 18: Piles created by S1.
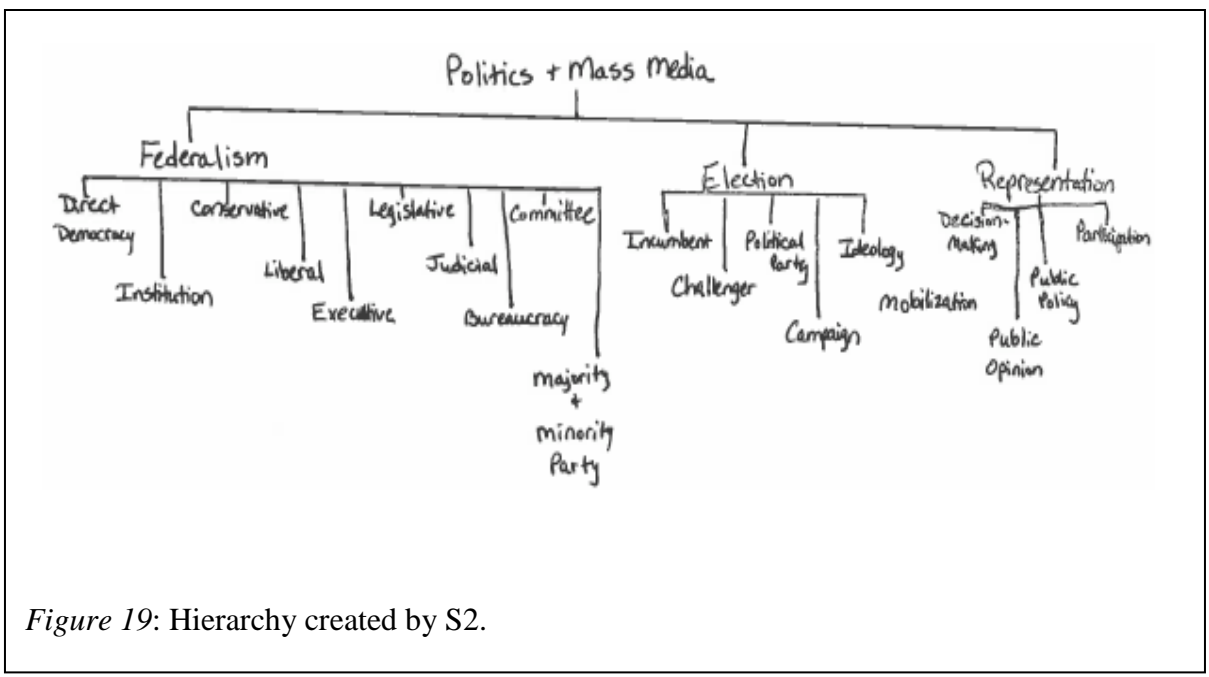
Figure 19: Hierarchy created by S2.

Politics

Political Party

Decision-Making

Committee

Bureaucracy

minority Party

majority Party

Partisan

Election

Campaign

Representation

Incumbent

Challenger

Public Policy

Federalism

Institution

Executive

Legislative

Judicial

Ideology

Liberal

Conservative

Unused Cards

Mass Media

Participation

Public Opinion

Mobilization

Figure 20: Piles created by S3.

Pile 1

Public Policy

Committee

Bureaucracy

Politics

Decision-making

Pile 2

Executive

Legislative

Judicial

Pile 3

Federalism

Direct Democracy

Ideology

Political Party

Conservative

Liberal

Election

Mass Media

Participation

Representation

Challenger

Public Opinion

mobilization

Partisan

Figure 21: Piles created by S4.

Appendix E – Pilot Study Interview Protocol and Problem-Solving Tasks

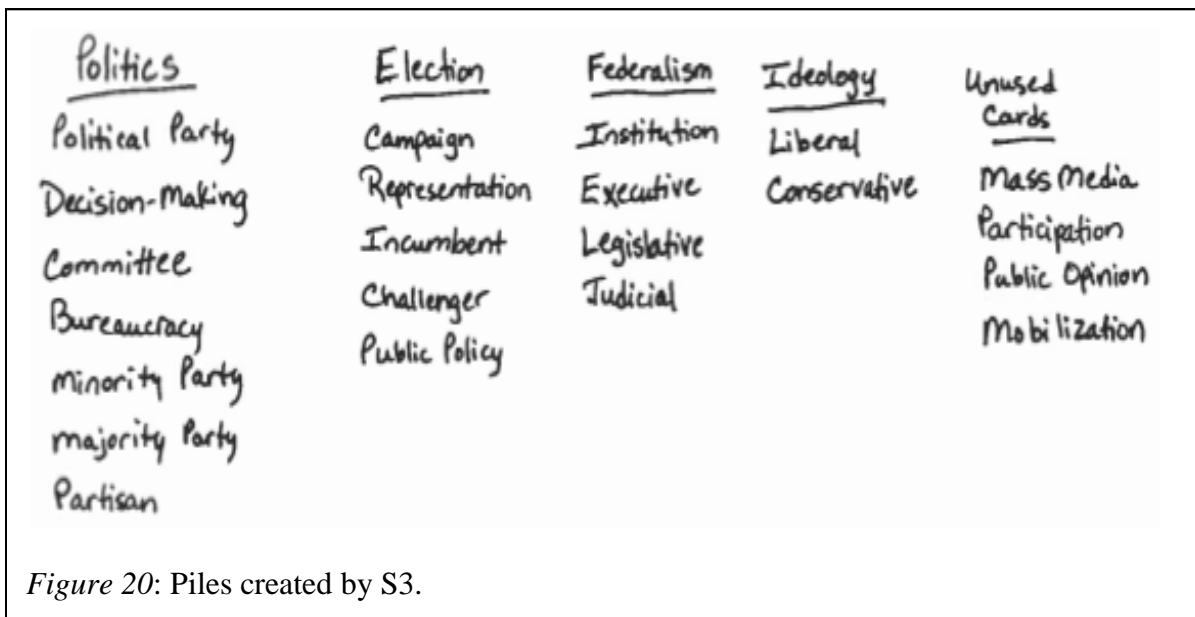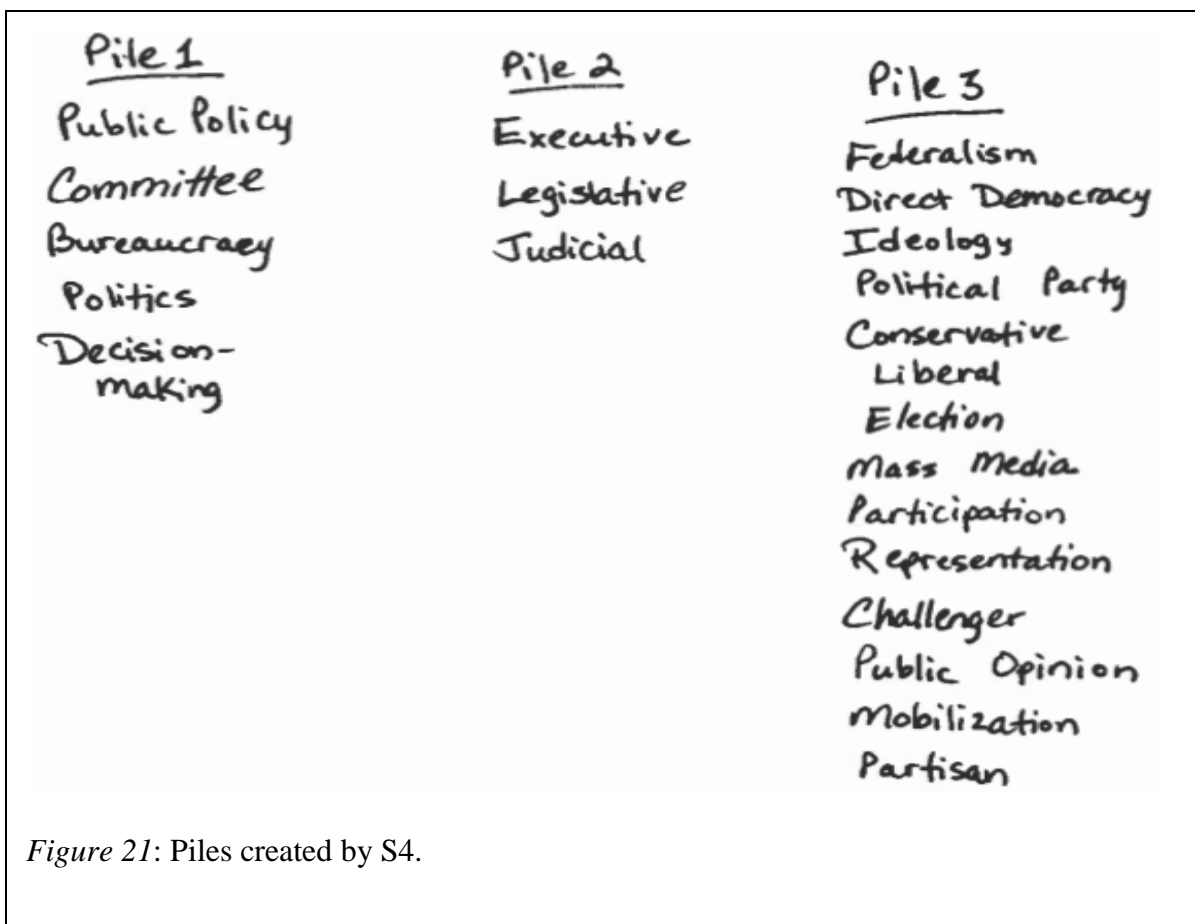"Thank you for agreeing to meet with me today. Our session today will consist of two parts: an interview and a series of problem-solving tasks. The interview is designed to help me understand the nature of expertise in government and political science, and therefore I will be asking you questions about your thinking about government and political science, your learning in government and political science, and aspects of your work. During the problem-solving tasks, I will give you a task and ask you to think aloud while you attempt to answer a question or solve a problem related to the task. This will help me get a sense of how you think about different aspects of government and political science. I will be recording our discussion to assist me as I attempt to understand how you think about government and political science. You may decline to answer any question and end the session at any point without consequence. Do you have any questions before we begin?"

Answer any questions.

Section 1: Interview Protocol

"First, I would like to ask you a little bit about your background.

1) What graduate program are you in?
        a. Do you have an area of specialization?
        b. How far are you in the program?

2) What was your undergraduate major?

3) What made you interested in political science?

4) What classes are you currently taking?
        a. What classes have been the most important/useful for you as you pursue your degree?
        b. Why?
        c. What classes have been the most interesting for you?
        d. Why?

5) Do you have an assistantship?
        a. If so, what do you do?

6) Have you participated in any research since you began your graduate program?
        a. If so, can you tell me a little about the research?

7) Have you published in any political science journals or presented at any conferences?
        a. If so, which ones and about what?

8) Do you belong to any professional organizations?
        a. If so, which ones?
        b. Why did you choose to belong to these?

9) What is government and political science?
        a. How do you know?

10) What is the goal of political science?
        a. How do you and others achieve the goal?

11) What topics in political science are you interested in?
        a. How do you know that these are topics that should/can be studied in political science?
        b. Do other political scientists study other topics?
        c. Such as?

12) What methods can you use to study the topics that you are interested in?
        a. Where did you learn those methods?
        b. What types of data can you collect and/or use in your work?
        c. What can you do with the information that you gather from your study?
        d. How do you know to do that?

13) What is a typical task that political scientists engage in?

14) What will you do as a political scientist?

15) Is there anything else you think I should know about government and political science that I have not asked?

Now we are going to begin the problem-solving tasks. I will present you with a task and ask you to think aloud as you consider the task and answer the question or solve the problem. We will practice thinking aloud first and then I will share the tasks with you. There will be a total of three tasks. Afterwards, I will ask you a few follow-up questions about the experience of working with these tasks. Do you have any questions?"

Answer any questions.

Section 2: Think-Aloud Guidelines

Go over Think-Aloud Guidelines.

1. Say whatever's on your mind. Don't hold back hunches, guesses, wild ideas, images, intentions.

2. Speak as continuously as possible. Say something at least once every five seconds, even if only, "I'm drawing a blank."

3. Speak audibly.

4. Don't worry about complete sentences and eloquence.

5. Don't over-explain or justify. Analyze no more than you would normally.

6. Get into the pattern of saying what you're thinking now, not of thinking for a while and then describing your thoughts.

D.N. Perkins, *The Mind's Best Work*. 1981.

"Now we are going to practice the think aloud. I will read the first part and think aloud, and then I will ask you to read the second part and think aloud."

Model think aloud and then practice think aloud. Ask if the participant has any questions, and answer any questions.

Section 3: Think-Aloud Practice

Miss Manners: A history of flatware
Wednesday, October 27, 2010; C07

Dear Miss Manners:

Could you tell me if it would be considered okay to cut your steak with a fork?

Certainly, but would you please first tell Miss Manners where it is possible to find steak tender enough to be cut with a fork?

Weird as it may seem, there is a complicated historical hierarchy that applies to flatware. Even more oddly, it is not the oldest implement that is most respected.

Lowest rank goes to the spoon, presumably -- in the form of some sort of scoop -- the oldest means of eating other than the fingers. Next comes the knife, which was, for centuries, used both to spear and to eat. Yes, the same individual knives, ick.

Then along came the fork, from Constantinople to Italy in the 12th century, and from Italy to France in the 16th century. The English were particularly slow in taking it up, and the world was well into the 19th century before it became universal there.

But then the fork became the instrument of choice in the Western world, which it has remained.

At that point, the hierarchy goes into reverse. Those specialized items that were made in

Victorian times (and still scare people, although they -- the items, not the people -- were long since melted down for their silver content) were rather sniffed at when they appeared.

So you had the following bizarre situation among the fastidious:

Whole fish on plate. High crime to use knife to fillet it because knives are intended for meat. But the darn thing is full of tiny bones. Fish knives invented, featuring clever little notch at tip for lifting the flesh from the bone. No, can't use that, too new. We believe in the fork above all.

Solution: Serve two forks for each plate of fish, to be used to pry the flesh in opposite directions with object of uncovering bones.

Personally, Miss Manners got tired of that silly spectacle and accepted the fish knife, the law against using a meat knife on fish being still on the books.

But you see the point -- well, maybe not the point, but the fact -- of the fork's paramount position. So if you can eat steak with a fork, even if you have a meat knife at your disposal, you will win the admiration of anyone versed in flatware history.

Once the participant has finished thinking aloud with the article, ask if he or she has any questions. Answer any questions.

Section 4: Task 1 *(Tasks will be presented to participants one at a time. Participants will be handed a sheet of paper with one of the tasks printed on it. They may write on the paper, but they will also be encouraged to verbalize their thinking. The tasks will be rotated so that participants will not receive the tasks in the same order as other participants.)*

"Here is the first task. You may write on the paper if you wish, but please share all of your thinking verbally as well."

Hand paper with task written on it to participant. Ask participant to read it aloud and then think aloud as he or she solves the problem.

Research task:
Imagine you have been given the freedom and funding to study anything you want in U. S. government and political science. What would you study, why, and how would you go about studying it? What would you do with the results of your study?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 5: Task 2

"Here is the second task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Campaign task:
Imagine you have been hired as a consultant by a political campaign in the U.S. How would you use your expertise to help make the campaign successful?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 6: Task 3

"Here is the final task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

14th Amendment task:
As you may know, some political leaders have called for a reinterpretation of the 14th Amendment due to the number of undocumented immigrants whose children are born in the United States and granted citizenship by birthright. If you were an advisor to a political leader, how might you advise them about the potential political impact of reinterpreting the 14th Amendment?

(If necessary) "The amendment is provided here for your reference*": "All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws."*

Once the participant has finished the task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 7: Task Follow-up

 "Thank you. Now I would like to ask you a few questions about the tasks.

1) Which task would you recommend that I use in order to understand political science and how political scientists think?

2) Which task was most like a problem a political scientist might study?
      a. Why?
      b. Why are the other tasks less like a political science problem?
      c. How might they be changed to make them more like a problem a political scientist might study?

3) Is there another way or a different task that I might be able to observe how political scientists think and go about their work?

4) Is there anything else you think I should know about the tasks or about political science?

Thank you for your time!"

Section 8: Second Round of Problem-Solving Tasks *(Tasks will be presented to participants one at a time. Participants will be handed a sheet of paper with one of the tasks printed on it. They may write on the paper, but they will also be encouraged to verbalize their thinking. The tasks will be rotated so that participants will not receive the tasks in the same order as other participants.)*

"Thank you for agreeing to meet with me again today. Our session today will consist a series of problem-solving tasks similar to the previous ones. Based on your feedback from the previous set of tasks, I attempted to create new ones that will better help me to understand political science and how you go about your work. During the problem-solving tasks, I will give you a task and ask you to think aloud while you attempt to answer a question or solve a problem related to the task. For your reference, here are the guidelines for thinking aloud (*review guidelines, answer questions related to thinking aloud).*

I will be recording our discussion to assist me as I attempt to understand how you think about government and political science. You may decline to answer any question and end the session at any point without consequence. Do you have any questions before we begin?"

Answer any questions.

Section 8.1: Task 1

"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

2010 Elections task: If you were tasked with researching the 2010 mid-term elections, what would you study and how would you go about it? What method(s) would you use and what data would you need?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.2: Task 2

"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Federalism task: If you were researching the nature of federalism as it relates to the interaction between the federal government and state governments, what would you study? What method(s) would you use and what data would you need?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.3: Task 3

"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Interest Groups task: How would you study the impact of interest groups on elections? What method(s) would you use and what data would you need?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.4: Task 4

"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Political Behavior task: How has political behavior been studied in the past? How would you study it?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.5: Task 5

"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Media task: If you were tasked with researching the role of the media in presidential campaigns, what would you study? What method(s) would you use and what data would you need?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.6: Task 6

"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Past elections task: If you were researching past elections, which one would you study? Why? What in particular would you study in regards to that election? How would you go about studying it?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.7: Task 7

"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Opposing Parties task: If you were studying the relationship between the executive and legislative branches when each is held by opposing parties, what would you study? What method(s) would you use and what data would you need?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.8: Task 8
"Here is a task. You may write on the paper if you wish, but please share all of your thinking verbally as well"

Ask participant to read it aloud and then think aloud as he or she solves the problem.

Government Shutdown task: Who do voters tend to blame when there is a government shut down, Congress or the president? What would be the political impact of a government shutdown due to disagreements over the federal budget (such as the one during the Clinton administration)? How would you study such a question?

Once the participant has finished the first task, ask if he or she has any questions or would like to say anything about the task. Answer any questions and then ask,

"Is there any data you would need in order to respond to this task? If so, what data and how would you use it?"

Section 8.9: Task Follow-up

 "Thank you. Now I would like to ask you a few questions about the tasks.

1) Which task would you recommend that I use in order to understand political science and how political scientists think?

2) Which task was most like a problem a political scientist might study?
     a. Why?
     b. Why are the other tasks less like a political science problem?
     c. How might they be changed to make them more like a problem a political scientist might study?

3) Is there another way or a different task that I might be able to observe how political scientists think and go about their work?

4) Is there anything else you think I should know about the tasks or about political science?

Thank you for your time!"

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