Welcome to Research Methods and Systematic Inquiry II. This semester you will be learning a mixed methods approach to research design. Understanding research design – the logic that ensures that the data collected will be able to answer the research question as completely as possible – will prepare you to design your dissertation methodology next semester.

Last spring, you were introduced to qualitative interviewing and quantitative survey techniques. These were methods used to collect the data necessary to show empirical evidence of your POP within your context of professional practice. Through this course, you will build on that knowledge, and learn the advantages of integrating these qualitative and quantitative methods, to more thoroughly answer your research questions surrounding the implementation and short term outcome of your POP intervention.
This session will introduce you to the foundation of the mixed methods approach. You will read about the historical debate between quantitative and qualitative methods that gave rise to the need for this approach and how the mixed methods framework can provide a pragmatic view of your research problem. This knowledge will be valuable as you begin to think about appropriate research questions related to the implementation and evaluation of your POP intervention.
Mixed methods research seeks to integrate social science disciplines with predominantly quantitative and predominantly qualitative approaches to theory, data collection, data analysis and interpretation. The purpose of a “mixed” approach is to strengthen the reliability of data, validity of the findings and recommendations, and to broaden and deepen our understanding of the processes through which program outcomes are achieved, and how these are affected by the context within which the program is implemented.

Before we move forward, I want to provide a review of both quantitative and qualitative methods. When employing a quantitative methodology, your goal is to determine the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population. Quantitative research designs are either descriptive (where subjects usually measured once) or experimental (where subjects measured before and after a treatment). A descriptive study establishes only associations between variables. An experimental one establishes causality. In this approach, there is a clearly defined research question, to which the researcher is seeking an objective answer, and all aspects of the study are carefully designed before data is collected. Quantitative data is numerical, usually gathered using structured research instruments (for instance, a survey), based on a
representative sample of the larger population, and analyzed using statistical tests. Quantitative studies are highly reliable, and are able to be replicated or repeated in order to support the initial findings. Finally, the overarching aim of quantitative research is to classify features, count them, and construct statistical models in an attempt to explain what is observed.

Qualitative methodologies emphasize the qualities of entities and on process and meanings that are not examined in quantitative methods. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and that which is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress how phenomenon in question was created and given meaning. In contrast, quantitative studies emphasize the measurement and the analysis of causal relationships between variables, not processes. Qualitative data allows for emerging themes to develop during the data collection, adapting inquiry as understanding deepens and/or situations change; the researcher avoids rigid designs that eliminate responsiveness and pursues new paths of discovery as they arise. Qualitative data is rich and often in the form of observational field notes, interview transcripts, or existing documents. This data is then systematically analyzed to explain a phenomenon or process.

So, why would we want to “mix” these two distinct methods? Well, quantitative methods are ideal for measuring pervasiveness of “known” phenomena and central patterns of association, including inferences of causality. Qualitative methods allow for identification of previously unknown processes, explanations of why and how phenomenon occur, and the range of their effects. Mixed methods research is more than simply collecting qualitative data from interviews, or collecting multiple forms of quantitative evidence. It involves the intentional collection of both quantitative and qualitative data in combination so that the strengths of each method improves your ability to answer a research question.
The methods employed in a study must fit the problem or research question. Problems most suitable for mixed methods are those in which the quantitative approach or qualitative approach, by itself, is inadequate to develop multiple perspectives and a complete understanding about a research problem or question. For example, if you wanted to understand the effect of a change in teaching pedagogy, would using students’ test scores be an adequate analysis? Probably not, you would still have a lot of questions about how the teacher implemented the change, how the students reacted, what change it made in the classroom, and likely many other questions. Alternatively, qualitative exploration may be useful prior to the development of an adequate instrument for measurement. By including qualitative research in mixed methods, you can study new questions and initiatives, complex phenomena, hard-to-measure constructs, and interactions in specific, everyday settings, in addition to experimental settings.

There are a number of reasons for using mixed methods in education research, and your book will outline those listed on this slide. I want to point out a couple of key points for considering this approach as you consider how to study your intervention. First, you may want to view the problems from multiple perspectives so as to enhance and enrich the meaning of a singular perspective. You might also want to contextualize
the information, to take a macro picture of a system (e.g., a school district) and add in information about individuals (e.g., students, teachers, or administrators). Another reason is to merge quantitative and qualitative data, developing a more complete understanding of a problem, develop a complementary picture, compare, validate, or triangulate results, or examine processes along with outcomes. Another reason is to have one database build on another. When a quantitative phase follows a qualitative phase, the intent of the researcher may be to develop a survey instrument or intervention that is based on the qualitative findings.
Studies that employ this mixed methods approach are often those which are attempting to understand a problem. In my experience, sociologists use this approach when we have to understand both the macro- and the micro-view of a problem. Take for instance a situation where you are trying to understand the effectiveness of an anti-bullying program in your school. You can survey students in a school and ask them a series of questions about bullying – if they have been a victim, if they know someone who has, if the problem is in their school. This will give you a snapshot of the problem. But what are you missing? You are missing the context and the rigorous evaluation of the problem within that student population. In the world of social media, we have unfortunately seen that bullying does not stop when a child leaves the school property, rather it can even extend into cyberspace. So, we need to have a deep understanding of what bullying means to children, the extent of the problem and where it is occurring, but also the context if we want to establish quality intervention. Even the best survey designer would not be able to capture all of the necessary elements into one valid instrument. If we stopped with just a survey, we would not be able to contextualize the problem, but were it not for that survey, we would likely not have a good handle on the prevalence and context of the problem. This is when we need to turn to mixed methods. A study of this nature should be designed to include both quantitative and
qualitative elements so that we can thoroughly understand the state of a problem and recognize where an intervention point might be best suited to improve the overall state of the problem.
Using a mixed methods approach draws on the strengths of both quantitative and qualitative methodology. As your textbook points out, this approach will allow you to ask more complex questions that could not be answered with one method alone. I want to draw your attention to one of the primary advantages of the mixed methods approach, and that is there are often practical outcomes that are derived from the findings. In my opinion, one of the most significant advantages of mixed methods research is the ability to speak to “real life” outcomes within the context of your study. Think about the Collins (1984) article you have read regarding statistics versus words; being able to use both numbers and words to solve a problem is very powerful.
While there are many advantages, there are still a number of challenges when using a mixed methods approach. I’m going expand on the three challenges addressed in your text. First, mixed methods is often misunderstood to be a study that has both quantitative and qualitative components. While it may have both methods, the research design is one that integrates each piece in a critical fashion, and what I mean by that is that a study cannot stand on the two component parts, rather it needs both to adequately address the research question. What this really means is that while you may have experience with one or both methods, the skill really lies in the experience in a mixed methods design. Another piece is certainly time and resources. As we discussed last semester, time and resources are both a strength and weakness of quantitative and qualitative methodologies – you often trade off the efficiency of a survey for a deeper understanding that comes with an interview. When you engage in a mixed methods design, you have to consider the resources necessary – this includes time and resources for both data collection and analysis. Finally, you want to ensure that you have valid and reliable results. In the research world, the mixed methods approach is gaining acceptance, however, as you have read, there are still those who question the feasibility and utility of this approach. It is still new, and as with anything new, there will be the dissenters who hold true to their time-honored approaches.
This semester you are going to be learning about research design and measurement. Throughout, you need to continue to refine your thinking when it comes to studying your intervention. You are going to be challenged to evaluate and validate that you are asking the right questions. This will be part of your discussion assignment this session. Along with asking the right questions, you will also need to make sure you identify all of the concepts that need to be measured. Measurement is certainly a science, you will need to make sure you have a valid measure – meaning that the existing literature should be used to support your decision to operationalize your variables. Basically, you want to make sure you are measuring what you think you are measuring in consideration of the existing body of literature. The valid measures and research design will be critical to ensuring that you collect the right data to document the intervention process and any proximal, or short term, outcomes. You will start to establish this process by developing a logic model for your intervention. This will be your roadmap for your study, that can be refined as you continue through next semester.
I want to review the concept and purpose of a logic model to help you understand the role of this diagram in your work this year. As the term suggests, a logic model communicates the logic behind a program, in other words the rationale of your intervention. A logic model's purpose is to communicate the underlying "theory" or set of assumptions or hypotheses the research has about why the program will work, or about why it is a good solution to an identified problem. A logic model is typically a diagram, flow chart, or some other visual schematic that conveys relationships between contextual factors and programmatic inputs, processes, and outcomes. This slide should help you understand what each element entails. I like that the second bullet point helps you develop the appropriate phrasing for each component.

There is no “one” logic model. These charts can come in all shapes and sizes, but the critical function of this model is the arrows which show your reasoning about “cause and effect” in relation to a desired outcome or goal. Logic models can be very basic, but you have to make sure that you pay specific attention to drawing the appropriate arrows – for instance between the inputs that provide the resources for the proposed activities. This is going to outline your “logic” as to why the proposed intervention would have a hypothesized effect. You will find
three different logic model worksheets that you can use to begin to develop
your logic model in session 2. Use the model that makes the most sense to
you – the elements are the same, just make sure that you include the arrows
to ensure that the cause and effect pathways are illustrated.

On the next slide, you are going to see an example of a logic model from the
Kellogg Foundation. This example is also in your logic model assignment for
the semester. I will talk you through some of the key points to help prepare you
for your assignment.
This final slide provides you with an example of a detailed logic model. What I like about this particular example, is that it helps you to explain what you should consider for each section. Before you begin to develop a logic model, you have to thoroughly understand your problem. You have developed this thinking during your work on the Year 1 paper. You need to explain the problem within your professional context in such a way that you clearly articulate the need for intervention and convey why this initiative is important. In doing so, you will want to start to think about the assumptions you are making about your professional context or the implementation of this intervention.

Next you are going to consider the inputs, in other words what resources are needed to develop and implement this intervention. Once you have established this line of thinking, you can focus on the activities. This is where you think about how each input will be used to achieve your goal. What I personally like about this detailed model, is that it helps you to visualize outputs in terms of activities and the scope of the work. Remember, you should be able to draw an arrow from each input to an activity and from that activity to an output. The assumptions will also be critical, and we will talk about that more next session. For now, I wanted to introduce the concept so that you are prepared to start
thinking about the overarching assignment for this semester.