

Week1-whatisresearch_audioonly

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SPEAKERS

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Everybody, welcome to week one, which is entitled, what is research anyway? So we're going to start out with pondering the question of what is research? What do we consider research? How do we go about doing it? There's no right or wrong way. As we'll learn throughout this semester, there's a platitude of ways to do research. There's a myriad ways of collecting data, and an equally varying number of ways to analyze that data. But it comes back to is, what are you looking for? What are you trying to measure? And what are you trying to find out? throughout the semester, we'll talk about the research method and we'll break it down into individual pieces. We'll walk through the process because as you can hopefully read in this syllabus. This class is designed for people who are ultimately going on to do research to be producers of research. And there's going to be some of you who go on and you become consumers of research. Both of those in both of those areas, you need to understand how research is completed. So that you can evaluate and understand if the research that you're reading isn't just good or bad. But how certain are we if the outcomes, how much weight can we put on? What was found in a particular study? And so starting that process out starting this journey out, we need to first think about free broadly, what is research? So according to the Oxford Dictionary, which I think many of you may start out, in looking for definitions of what something is It defines research as the systematic investigation into in the study of materials and sources in order to establish facts and new conclusions. That is certainly one way to look at research.

According to Albert Einstein, he mentioned if we knew what we were doing, it wouldn't be research. So getting into the research process, don't think you have to know everything ahead of time. We need to have a solid foundation of knowledge. But when you get into an area of doing quote, unquote, research, you are looking for the unknown. Whether that's quantitatively measuring things or qualitatively measuring them. What we're doing is looking at an unknown situation and trying to answer that, using the data that we collect. Johann Wolfgang von Goethe said we by seeking and blundering we Learn. So throughout the research process, there are many, many times that you will have even one of the most methodologically sound studies, find nothing. Or you'll get to the end of the study and you'll find out that you needed to do something different at the beginning that would have changed our major data better. For example, my one of my research mentors, was researching how blind individuals use or could use echolocation in order to find where a target is in order to throw it. But he used sighted participants because he was looking for individuals who throw using mature pattern. But what he found is that sighted participants didn't know how to listen. And so their throws often were variable. accurate. And so his study could have used a session or two prior to data collection of actually teaching people on how to do use the technique. And therefore he would have had a better data set to work with. Scientific Research consists in seeing what everyone else has, but thinking what no one else thought. This is unknown who it's attributed to. But it gets to the point of when we look at research, many of you are going to be working in topic areas that have prior research, and that's okay. And if you don't know where to look yet, that's also okay. But what we're ultimately going to lead you to is in reading the research in your area and around your area and even research outside of your area. You start to see these little slivers of light between information. And what we want to do then is create a bridge. And that's where you fit in. You find these little areas that aren't connected, and you make those connections. And the quotes because we're getting a little monotonous with one from Carl Sagan, and just enormously easier to present in an appealing way, the wisdom distilled from centuries of patient and collective interrogation nature into detail the messy distillation apparatus. The method of science is stodgy and frumpy as it may seem, is far more important to the findings of science. Carl Sagan in saying this, pointing to the idea that research methods are the important piece. It's really Great when stuff, quote unquote, goes viral, or gets a lot of attention. But sometimes those studies that get a lot of attention aren't that great. They have some methodological issues. And with science, it's usually never very quick for us to find answers. Sometimes a question may take several months of study. Sometimes it might take several years. And sometimes it could even take several decades. And so don't get frustrated. If you don't have all the answers right away. It might just mean that you need to build upon the knowledge that you've learned. Most scientists understand that at the end of any project, there's always more questions. You're never really done when you finish a science research study. So when we think again about what research is, it's a process It's not a necessarily thing. It's

what we do. It's the research method. It's systematic. It uses the evidence that has come before it, sort of prior research to guide further evidence and data collection. It situates whatever it finds in the data. That way, you know that what you're saying is actually based in fact. And it's different from just science. Right? It's a process. It's the system. It's not just a thing, like scientists. So why do we do research then? Well, some of us get into it because we're curious, and we want to understand how things work. Some of us get into it because we want to make the world a better place and one way to do that is through research. And another is because some of us might be really interested in addressing problems that nobody else has yet, or at least that we know of. Some of you might be looking at those and go, Well, I want to do all of them. And that's great, too. You're in the right profession. It also might mean that we're looking to provide services that work and are cost effective as well as efficient. It might mean we're trying to effectively influence policy or practice. We also need research, because that's how sometimes you get money to do other things. And so, if you're a consumer of research, you might need to pull on the research that people are doing in order to write a grant. If you're doing research, you might need to pull from the research you or others have done in order to write that grant as well. We also know that doing research enhances certain professions prestige and legitimacy. Often new areas aren't considered established until they have a base of research base of information. If you're going into academic academia, it's necessary. You have to do research, you have to be a scholar, no matter what institution you might work at. And maybe you're just really curious. But the process is long. It can be arduous at times. So why bother? Well, we need to make sure that we investigate what the evidence is in our field and actually practice the skills that we need to do those things. We also recognize that there's little that is truly known. We have a A lot of information that we do know, but there's a lot that we don't. And even some of the information that we think we really, really know, can sometimes be wrong. It can be disproven. In certain service fields, like those of you going into sports psychology, or those of you who want to work in the health industry, few actually do the research in those areas. But everyone benefits from those services. And everyone benefits from the research has done in any area, we need to improve the services and treatments, as well as the programs. And we need to actually know if those things work. It can't be enough for us to just enact a program and expect everyone to benefit from it. Sometimes programs can be enacted, and they can actually have a detriment if the appropriate knowledge isn't known ahead of time about what the impacts of those programs are. We also know that research can be empowering. It helps improve practice. Individuals using different treatment methods or interventions have much more confidence when there's evidence that show those interventions are effective. We need to be able to critically assess research evidence, and we need to be able to document the results. And ultimately, research can help you demonstrate that you are making a difference. You can see in the numbers are in the words that people use to describe their experiences. You can see a change and you can see what impact you're

having based on the things that you're doing. And so how do we acquire knowledge? Well, there's multiple different ways all the way help build the research. method. So we can get information through intuition, right? That gut feeling that you just know something is going to happen or you know, it happens a certain way. This isn't really the best way to get knowledge. And it's important to distinguish it from professional judgment. In intuition is just that gut feeling. You just no. professional judgment is a conscious process where you're using facts and evidence to form your decision making. It's not necessarily that you're just you just know it's the right way. We can get knowledge through tradition, where knowledge is passed down from person to person. Typically, it's based on authority. It's a holder For grandparent passing information, it's a mentor passing information down. It's a faculty member, sharing information and passing along process. It is important to distinguish between knowledge which is based in fact and beliefs, which are based on faith. And both can be passed down through tradition. But we also need to accept that both are neither final nor certain. Even knowledge, we are not entrepreneurs at certain, we can be very confident, but there's always a little potential that it might not be right. We have knowledge that's passed down through authority. Scientists, expert practitioners, or other authorities are experts in a field You need to be open to question the accuracy of authority. It's not just enough to take it as just on the face of it. It's really evident in looking at certain journals where some of you may know, journals like the Lancet, or science are very highly, highly regarded. Yet, each year, there's always a few studies that ended up being redacted, meaning the evidence isn't sufficient or it's mis described in such a significant way that the journal has taken it back they've quote unquote, unpublished it. It doesn't mean that the scientist did it maliciously. But it's important to recognize that it happens in even the most prestigious journals. So, if you see something that's published in one of those, it's probably good. But you need to always still question that knowledge. And you also need to be skeptical of the media as a source of evidence. Not that the media is wrong, or it's fake. The media is a great source of information. Yet they may sensationalize research. There's many instances where a research study will come to a conclusion, such as sugar being bad or caffeine. being bad. You may see these news articles every now and then we're about every three weeks caffeine coffee becomes Good for you, and then it becomes bad for you based on one study that comes out. And that's the important part. It's one study. As I mentioned to you research is a process. No one study changes the course of that knowledge that might differ, it might be contrary to what we know. But it doesn't necessarily mean that we just disregard everything that came before it. We take it all collectively. So if you're finding information that only is from a new source, just be skeptical of it. Make sure you check the research study that they're actually attributing to their story. And then we also gain knowledge through experience, which is gained by doing in that knowledge that you gain. You also gain biases you may inadvertently think this is the only way it needs to be. Or you might have blinders to other ways of completing that, that in that thing, whatever it is, you're gaining experience. And

so just be careful. While experience is important in gaining that knowledge, you also have to be reflective about your own your own biases in learning that knowledge and gaining that knowledge. And then we have the research method, which, as I mentioned before, is a systemic process or systematic process. And it typically starts with identifying the problem. Usually, it takes reading and information. There should probably be a side bubble here. But you sometimes need to know what's going on in your field before you can identify what the problem is. Once you have the problem It needs to be defined in terms of a question. And that question needs to have a capacity for study. As we go through the semester, in a couple of weeks, we'll talk about how do you develop research questions. And once you develop a research question, then you can start to plan how to answer that question. And that's where you start talking about different research methodologies, different methods of measuring and gathering data. Once you have a plan, then you go about gathering your data. And you needed to do so according to prescribed practices, meaning, you need to make sure your study is ethically sound. And we'll talk about that a couple of weeks. Once you've analyzed the data, then you draw conclusions. You draw inferences from the data. We won't cover this piece so much in this semester. But throughout your studies, particularly in your next class 5150, you'll learn how to interpret certain types of data. If you're interested in things that aren't quantitative and qualitative data collection, you might have to take qualitative data class, or work with somebody who does that type of research. Because how we draw inferences is a little different between quantitative and qualitative methodology. Once you've drawn those conclusions, though, you'll start to see, oh, there's another problem. And so the research process, in addition to being systematic, is also cyclical, because it keeps going around and around. And so, what you'll need to do in order to do research, is you need to understand first how to work in research contexts. You'll learn you'll need to learn how to speak Research language. You'll hear from colleagues and from faculty who talk certain ways depending on the type of research they do. You'll start to look at things and ways of breaking them down into a research design. And doing research you'll need to know how to design a study, how to collect data, how to be culturally sensitive, how to analyze that data, and to ultimately write the report and the proposal and then building out that information. It's good to know about the knowledge level continuum because this has impact on the type of research that we might take part in given a certain research question. So research has three purposes. It can be descriptive. It can evaluate, or it can explain. And because there's always an alternative, there's sometimes a better way to solve a problem. And there's sometimes many different ways to go about measuring reach certain types of data, even though they may have similar questions. So it's important to know ahead of time what you want to do, do you want to describe, do you want to evaluate or you trying to explain? So it can in looking at the level knowledge level continuum, we have the explanatory descriptive and exploratory levels and those based on whether we have a high level of prior knowledge or a low level of priority Knowledge. And so if something's

explanatory, that means you likely have a high level of prior information. So you're much more likely to use a quantitative type of approach. If you have a low amount of information, you might do an exploratory approach. And if you're looking to describe, you could use quantitative or qualitative approaches. Now, obviously, research isn't just that simple, but it's a good place to start. If you have a high level, you may lean toward quantitative type research. If it's low, you might go qualitative. But, again, these aren't definitive rules that you need to follow. So just digging a little further, with exploratory research again, you're becoming familiar with the basic facts of people or concerns going on in a particular area, or in a particular situation, you want to ultimately develop a well rounded mental picture of what's occurring. And this might start with generating items or even developing tentative theories about what's going on in a certain area. You want to determine the feasibility of doing additional research studies. So you want to know if it's valuable enough to do an intervention. You wouldn't want to use resources to do an intervention in an area that it might not have any impact. You're going to want to formulate questions and refine issues for more systematic inquiry. And you may even want to develop new techniques or a sense of direction for what future research should do. Within descriptive research studies, we want to provide an accurate profile. So we're describing what the process or mechanism of a relationship is. I'm going to give a verbal or numeric picture, such as percentages about what the population looks like, or what a certain phenomenon looks like. We want to find information to stimulate new explanations even want to create a set of categories or classify different types of items. We may even want to clarify a sequence or set of stages or steps. And we may document information that confirms or contradicts prior beliefs. And often this is where quantitative and qualitative data meet. So it might be where you provide descriptions with a population. Yet, within this type of data, you can only describe the who, what when, where and how. You can't say what caused it. Within descriptive studies provides a number of times something occurs or lends itself to statistical calculation such as determining the average number of occurrences or central tendencies. And one of its major limitations is it can't help determine what caused a specific behavior, motivation, or occurrence or just describing what's going on. Which is why we need explanatory research. And this is where you're determining the accuracy of a principle or even a theory. You're linking different issues under common general statements. You can build an elaborate a theory so it becomes more complete. You can provide evidence to support or refute any excellent explanation. And your primary goal is to understand the nature nature of the relationship between the independent and dependent variables and ultimately, you're trying to find cause Relationships between variables. Although it's important to recognize that research never proves anything, single study can't prove whether something is connected to something else, even though some scientists like to think so. You're looking at the probability, you're looking at the likelihood of what two things have in common. Ultimately, over career, you might get to the point where you have enough evidence to

definitively say one way or the other. But one study will not do that. Another thing we want to mention here is the difference between pure or what's also called basic research and Applied Studies, because they are two different types of things. They're both science and they're both equally valid. They just have different expectations. With pure research, the goal is to develop the theory and expand the knowledge base. It produces theoretical results. Applied looks to develop solutions for problems and applications and practice. So it produces practical results. Defining a few things as we move on, mostly so that we have common language to work from. When I talk about phenomenon, that's an observation, you're observing something going on in a particular area. Construct is defining the definition used for the explanation? Sometimes there's literature that gives you the definition of what that particular construct is. Sometimes you may have to make it up and what's called an operational definition. So for example, when I do physical activity research, there's some times when I have to define what physical activity is, because each person has a different definition of what they consider physical activity. So to make sure everybody in my study is on the same page, or everybody reading my manuscript is on the same page. I'll define how I see physical activity, or what I consider physical activity to be. That way, we're all on common ground to start. We have variables, which are the measurable arm of a construct. So once I define what physical activity is, then I'm going to pick what variables I'm measuring in order to say what physical activity are putting operation. Put that definition, that exact number or thing on what physical activity is, for example, heart rate, or calories burned. If I'm trying to look at how physically active someone is, I might look at how much time they're spending in moderate to vigorous physical activity. And then when we talk about constant, that means there's no difference. The same. Going further, we have dependent variables, which are the measured operationally defined objects. The value depends on something else. Therefore it's dependent. It's dependent. And that's typically the focus of a study. The independent variables are the measured or the experimentally defined. They're related to or they're, they affect the dependent variable. So perhaps I'm looking for moderate to vigorous physical activity. That might be my independent variable. So I might manipulate people in order to get them to do more moderate to vigorous physical activity. And perhaps I'm looking at their mental health, which would be my dependent variable. And so however, I've defined mental health, and however I'm measuring it, I might do a study that looks at how much someone's mental health changes or how they speak of their mental health, how it might change based on their moderate to vigorous physical activity engagement. Another thing we have for our extraneous variables. So these might be things that are pre existing. We're even things that might intervene in the environment in your study. And in many clinical or quantitative studies, even some qualitative studies, you're trying to control for these extraneous variables. This might be where we limit participant recruitment to certain populations in order to limit some of those pre existing variables that exist, that might influence your data collection. Maybe someone has a physical

disability that makes movement difficult. And if you need to get someone to a certain level for a certain period of time. While it's important to know, it might be difficult to parse out your data if that person might be included. So you might limit your recruitment and only to those who are able to emulate using their legs for example. I also want to define her early for everyone the idea of quantitative qualitative and mixed methods data. So, quantitative data is typically the generation of numerical data numbers. Qualitative data is the generation and interpretation of non numerical data, which could be interviews, it could also be written, it could also be observation and not that quantitative data collection can't take those places. Take collect data in those types of spaces. But with quantitative data, you're you're dissolving information down into a number which has a certain value and quality data you're, you're analyzing the actual words, whether they be yours or someone else's. And with mixed methods data, you're integrating both quantitative and qualitative data, qualitative data to come up with deeper interpretations. And we'll talk about each of those different areas in much more depth later on in the semester. I also want to bring in the idea of a philosophical worldview, your ontology, and epistemology. A philosophical worldview represents your set of beliefs that are related to the general orientation of the world. It's how you see the world being constructed. And that is going to be different for pretty much every person in this room. Some of you may have similarities, but many of you will have different prior experiences, which include That's how you look at the world. We also have ontology, which is someone's belief in the nature of truth and reality. So not only May our worldviews different, but how we believe that knowledge is constructed, is also going to be different. And then we have epistemology, which is someone's belief about how we acquire that knowledge and how we go about finding truths and realities. And those are important when we when we talk about research paradigms, which we will next week. But I want to start first with just giving you an overview of some of the research paradigms. We first have post positivism, which is a progression from positivism within post positivism Individuals believe that there's a single reality, or there's an objective truth. There's one reality in the world. There's facts that are indisputable. And we just have to find out what they are within post positivist research, individuals don't believe that you can ever measure the truth. But if you find enough non truths, eventually you're, you're going to stumble upon the truth. Or you're going to have enough evidence to say, Well, if it's not all of these other things, then it must be that you can have constructivism, which is where multiple realities exist. And the meanings between those realities are varied and complex. The idea here is that everyone constructs their own reality based on their experiences. You can have pragmatism, which is where visuals are concerned with solutions to problems, where you're not necessarily worried about what's right or wrong. But you're trying to find out what works. We can have transformative paradigms, which are typically tied to politics, although not always. And they're more action oriented. So you're looking to transform something. So within research, I'm sure many of you are thinking, well, it's got to

be unbiased. You can't go about doing anything. Well, that's not necessarily the case. Research always has an impact, whether we're measuring it over attending to it. Those who fall into a transformative paradigm recognize the power of research and the fact that research influences any situation. And they leverage that fact to try to make actionable items in which in which you actually haven't impact in a situation where you guide where you get people to go. And then there's what's called to eyed seeing, which there are many ways to understand the world. And this is typically rooted in Indigenous Studies, or in cultures, where individuals may have to live in two different worlds that aren't always compatible. Take for example, those who live in indigenous spaces also have to deal with the spaces that are not usually designed for them. Allah whitespaces and so they have two ways of seeing the world. They have the way in which they see the world from their indigenous culture, and what they've learned from their family and how they see the world there. But they're also able to use the white centric way of looking at the world and they can go between each other We can do what's called code switching. There are other paradigms that fit within these that that are stems from the sort of broader categories that we talked about. There are things like critical paradigms or even feminist paradigms, or radical paradigms. And in fact, I, in starting you thinking about this process, I consider myself a radical pragmatist. The work I do is concerned with solutions. But yet I don't ever believe that any system is pure or sacred, that we can radically look at and radically question everything that we're working with, to look for better solutions. Not necessarily that any solution is right or wrong, but what's better, and sometimes that might be Take radically analyzing something in order to find something that's better. And so what I'd like you to do is a couple of different discussions for this week. The first one I'd like you to do is read the abstracts that I've provided in discussion post number one, which is available later in the module. Within reading each of those, I'd like you to consider how each of the research studies described above might look if guided by different philosophical worldview. So you kind of have to think about the worldview of which, sorry, excuse me, the researchers are using in that particular study, and you're only reading the abstract so you don't have a lot of information if they used a different worldview How would the research focus stay the same? Or would it change? What methods might change? And are there any implication for the conclusions that they make at the end of the abstract? Might that change? And so what I'd like you to do in the discussion post, is pick one of the articles, read through the abstract. And then in your post, consider each of these points. So when you make your post, put down, which article you read, and what the worldview is, that you think they're operating from, and then answer the subsequent questions. It'd be good for you to read all of them, but you only have to respond in a discussion post to one. After you've done that, in order to receive full points, you have to respond to at least three other people. So this is it's important to get these done as early as you can. And there are due dates at the end of the week. However, if you're having trouble completing it by the end of the week, it's okay to do it throughout the weekend, I just put the deadlines in there

to make sure that you stay on track. Because I don't want you to be having to do these later on in the semester, go back and have to answer these prompts. So make sure you're doing them early in the week, or as soon as you can. But by next Monday, each of you should have at least made an initial response and have responded to three other people. For your second discussion point, I want you to consider your own worldview. So given what's been discussed in the first lecture, obviously we haven't covered very in depth yet the paradigms What might you say you operate from? Why do you believe this is your paradigm? And do you have trouble just picking, picking Just one? Again, you have to make an initial post, and then respond to three other people. With all of these discussions, there's no right or wrong answer. But I want to get you to start thinking about really reflecting on how you view and how you construct research. So, in conclusion, we know that knowledge is essential. We know that there's many ways of knowing things. And we know there's many ways of building on knowledge, one of which is the research method. We know research can be approached in different ways. And we know research defines a preferred way of thinking or actions. And with that comes really understanding where you fit in that process, which we're going to continue to discuss in next week's module.