The role of theory in research

Division for Postgraduate Studies (DPGS)
Post-graduate Enrolment and Throughput Program

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Outline

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❖ Some characteristics of 'theory'.

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RESPICE PROSPICE

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Some definitions of 'theory'

- ❖ Theory is a <u>model or framework for observation and understanding</u>, which shapes both what we see and how we see it. Theory allows the researcher to make links between the abstract and the concrete; the theoretical and the empirical; thought statements and observational statements etc.

- ❖ Theory is a <u>generalised statement that asserts a connection between two or more types of phenomena</u> – any generalised explanatory principle.

- ❖ Theory is a <u>system of interconnected abstractions or ideas</u> that condenses and organises knowledge about the world.

- ❖ Theory <u>explains and predicts</u> the relationship between variables.

Some characteristics of 'theory'

❖ Theory <u>guides research and organises its ideas</u>. The analogy of bricks lying around haphazardly in the brickyard: 'facts' of different shapes and sizes have no meaning unless they are drawn together in a theoretical or conceptual framework.

❖ Theory becomes stronger as more supporting evidence is gathered; and it <u>provides a context for predictions</u>.

❖ Theory has the <u>capacity to generate new research</u>.

❖ Theory is <u>empirically relevant</u> and always tentative.

Theories vs. hypotheses

Hypotheses usually predicts the relationship between two or more variables. Hypotheses are more specific than theories. Multiple hypotheses may relate to one theory. The theories that you use in your research operates at different levels:

❖**Micro-level theory** seeks to explain behaviour at the level of the individual or family environment (e.g. psychology, frustration, aggression hypothesis etc).

❖**Meso-level theory** seeks to explain the interactions of micro-level organisations (e.g. social institutions, communities etc).

❖**Macro-level theory** seeks to explain behaviour at the level of large groups of people (e.g. ethnicity, class, gender etc)

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How to evaluate the quality of a theory or explanation

❖ Is the theory logical and coherent?

❖ Does it fit the available data?

❖ Does it provide testable claims?

❖ Have the theory-based predictions been tested?

❖ Does the theory work better than rival theories or explanations?

❖ Is it general enough to apply to more than one place, situation, or person?

❖ Can practitioners use it to control or influence things in the world e.g:

✓ a good theory of teaching helps teachers to positively influence students learning.

✓ a good theory of counselling helps counsellors to positively influence their clients' mental health

The dynamic relationship between theory and research

Theory and research are interrelated in the following ways:

❖Theory frames what we look at, how we think and look at it.

❖It provides basic concepts and directs us to the important questions.

❖It suggests ways for us to make sense of research data.

❖Theory enables us to connect a single study to the immense base of knowledge to which other researchers contribute.

❖It helps a researcher see the forest instead of just a single tree.

❖Theory increases a researcher's awareness of interconnections and of the broader significance of data.

(Neuman, WL 1997. Social Research methods. Qualitative and quantitative approaches. Boston, London Toronto: Allyn & Bacon).

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The dynamic relationship continues.....

❖Theories are, by their nature, abstract and provide a selective and one-sided account of the many-sided concrete social world.

❖Theory allows the researcher to make links between the abstract and the concrete, the theoretical and the empirical, thought statements and observational statements etc.

❖There is a two-way relationship between theory and research. Social theory informs our understanding of issues, which, in turn, assists us in making research decisions and making sense of the world.

❖Theory is not fixed; it is provisional, open to revision and grows into more accurate and comprehensive explanations about the make-up and operation of the social world.

The dynamic relationship continues.....

Theory makes the most significant progress by interacting with research findings (empirical data). In adopting a theory-based approach to research, the researcher must adopt the following assumptions:

❖Research problems must fit within a larger, logically consistent conceptual framework which incorporates research done to date

❖Variables useful in the explanation and prediction of phenomena become the 'significant' facts

❖To work towards objectivity, empirical testing and replication by others is essential.

❖Research findings must be situated within, the theoretical framework in order to identify further research which can continue the process of theory confirmation.

Deductive theory

In a deductive approach, researchers use theory to guide the design of a study and the interpretation of results. As researchers continue to conduct empirical research in testing a theory, they develop confidence that some parts of it are true. Researchers may modify some propositions of a theory or reject them if several well-conducted studies have negative findings. A theory's core propositions and central tenets are more difficult to test and are refuted less often. In a slow process, researchers may decide to abandon or change a theory as the evidence against it mounts over time and cannot be logically reconciled.

Inductive theory

Inductive theorising begins with a few assumptions and broad orienting concepts. Theory develops from the ground up as the researchers gather and analyse the data. Theory emerges slowly, concept by concept, and proposition by proposition, in a specific area. Over time, the concepts and empirical generalisations emerge and mature. Soon, relationships become visible and researchers weave knowledge from different studies into more abstract theory. Empirical generalizations posit the most basic relationship between concepts: e.g. 'most people I know who drive small Japanese cars are under 30 years of age'.

Example of theory relevant to a particular research question

Researching multilingualism in mathematics education is by its nature inter-disciplinary. Research into multilingualism within mathematics education has drawn on a variety of theoretical perspectives, including: bilingual education; discursive theories of cognition; discursive approaches to socio-linguistics; Vygotskian approaches to teaching and learning. This inter-disciplinarity leads to a number of questions. What theories are relevant to work in mathematics education? How might these theories be applied in mathematics education? What are the challenges which arise from working with theories from other disciplines?

Theories and findings related to second language learning

❖ **<u>The Behaviourist Approach</u>**

Behaviourists regard language learning as habit formation, as a result of connecting responses to stimuli. Children learn to speak because they are reinforced for doing so. Critics of the behaviourist position claim that although this view may have an intuitive appeal, it provides only a partial explanation of children's early language learning.

❖ **<u>Social Models</u>**

Social models of language acquisition (SLA) consider that social factors have an indirect effect on all mental processes. This theory examines linguistic variability rather than universality and claim that children may develop more than one grammar depending on particular situational contexts. A complex view of L2 learning called The Socio-Educational Model explains how individual factors and general features of society interact in L2 learning. The Acculturation Model (Schuman, 1978, in Brown, 1993) suggests that successful learning means "acculturation" – becoming part of the target culture. Learning takes place in society and depends on motivation and aptitude.

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❖ **<u>Linguistic Universals</u>**

Universality is one of the most fascinating characteristics of language. Children in all cultures appear predisposed to acquire language through almost the same phases, and may be born with an innate mechanism to learn language – Language Acquisition Device (LAD). Mentalist/nativist theories state that there seems to be one best type of grammatical analysis that all of us are programmed to develop and it is universal to all languages, using the same grammatical forms and relations or linguistic universals, which were later applied to.

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❖ **<u>The Cognitive Approach</u>**

Children do not simply imitate the language they hear, but rather learn to construct grammatically correct sentences they have never heard before by generalizing about language. There appears to be a critical period of language acquisition when social models of language acquisition (SLA) can take place naturally and effortlessly. From a cognitive perspective, language acquisition occurs in increasingly complex stages as children actively seek ways to express themselves (Brown, 1993). The sequence appears to be universal

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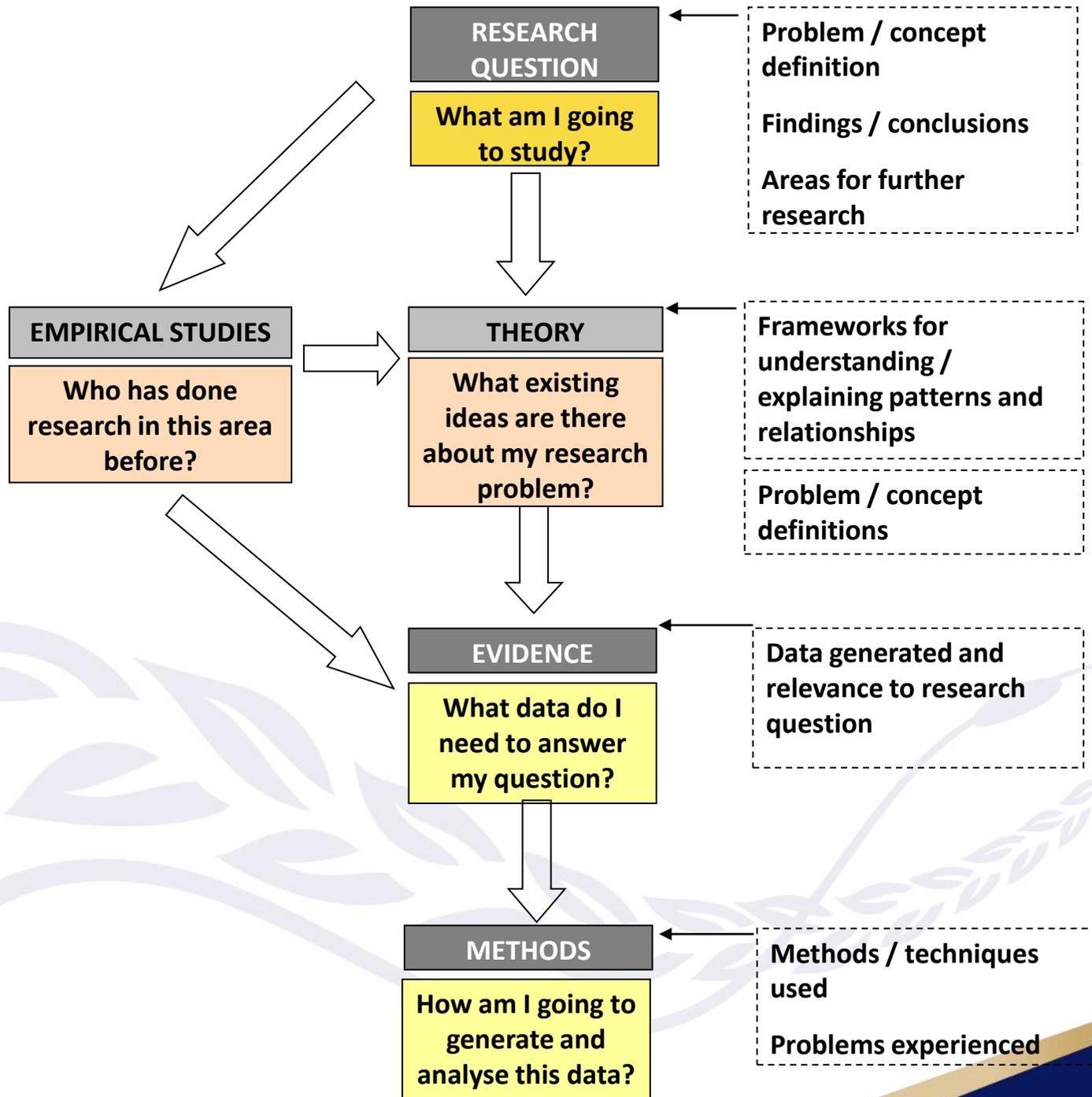to action through knowledge

❖ **<u>The Humanist Approach</u>**

The Humanist Approach differs from others in that it focuses on the affective components of learning. For a long time the relationship between cognition and emotion has been a controversial issue. Increasingly, we are becoming aware that cognition, emotion and personality are not entirely independent *(Crowl et al., 1997)*. The success of the humanist approach towards teaching depends on the extent to which the teacher caters to learners' affective domain. Critics have a variety of objections, but it would appear that many humanist programs have not been evaluated properly to determine their effectiveness.

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The role of theory in research

RESEARCH QUESTION

What am I going to study?

Problem / concept definition

Findings / conclusions

Areas for further research

EMPIRICAL STUDIES

Who has done research in this area before?

THEORY

What existing ideas are there about my research problem?

Frameworks for understanding / explaining patterns and relationships

Problem / concept definitions

EVIDENCE

What data do I need to answer my question?

Data generated and relevance to research question

METHODS

How am I going to generate and analyse this data?

Methods / techniques used

Problems experienced

TASK 1

In pairs, and drawing on your past experience and knowledge, write down your current definition of the term 'theory'.

TASK 2

Study the Research Journey map and trace the route from "Begin here" to the "Sea of theory".

❖Identify the different stages on the Research Journey map where you think that the researcher needs to draw on or use theory in some way. Make a list of these.

❖Can you see possible differences in the way in which theory might be used at these various stages? How would you describe these differences?

TASK 3a

This task is designed to help you to begin to 'get at' your current theories about your own research topic, i.e. to become conscious of them and articulate them so they may be put up front and tested in some ways. In pairs, consider the following questions:

Formulate your key research question: what are you ultimately trying to answer? What are some of the sub-questions to this bigger question? Attempt to provide a response or explanation for your bigger research question as well as the sub-questions. Think about what it is that you are drawing on in developing these responses. Develop a list of factors that have influenced your response. Ask your partner to 'critique' and point out any assumptions in your response. Do you need to research any of these assumptions before you can proceed with addressing your research question?

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TASK 3b

What level of explanation do you think will be most appropriate for researching your topic? (micro, meso, macro). Will you be trying to explain causal links? Or people's own meanings (phenomenological)? Or historical developments? Have you read any books or journal articles which could support and help you to develop your argument? If so, which? Were these authors working in similar or different contexts to you? Are there any theorists who refute your arguments or take a different perspective? If so, who? Do they work in similar or different contexts to you?

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