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2019-2020 Conferences: Trinidad (March 2019); Japan (September 2019); New Zealand (December 2019); Baltimore (June 2020)

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Mixed Methods Case Study Research

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Outline

- Two Approaches to Mixed Methods Case Study Research (MMCSR)
- Review of case study research
- Definition of MMCSR
- Review of the Core MMR designs
- Purpose of Mixed Methods Case Study Design
- Examples of MMCSR

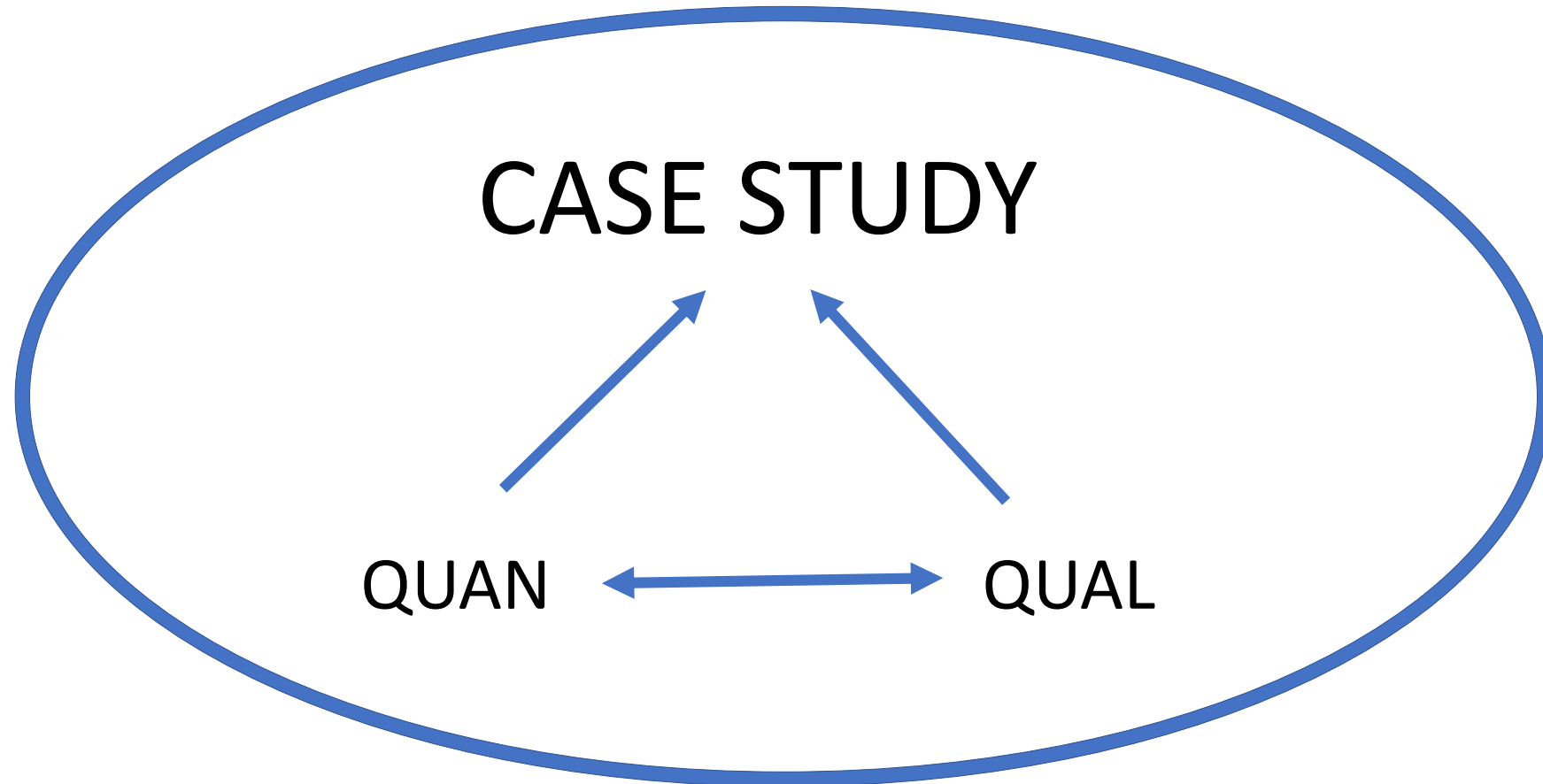
Introduction

- There is a need for research that captures and provides insight into the complexity of pressing social, economic and health problems
- Both mixed methods research and case study research offer unique methodological advantages for researchers wanting to address the complexity of these research problems and issues (Plano Clark, Foote & Walton, 2018).

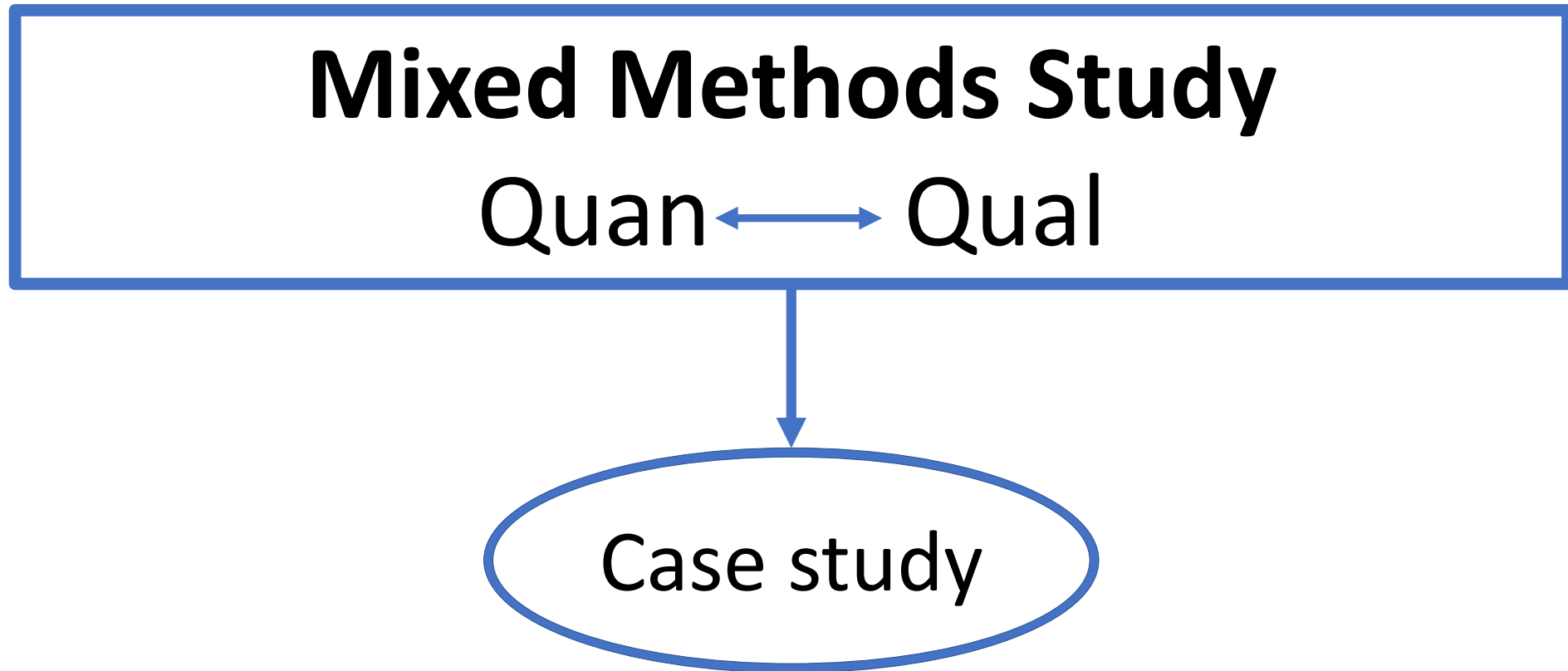
Introduction

Case study and mixed methods research are not separate entities but rather the boundary between them is **permeable** and **fluid** allowing each to either support or lead in a research endeavor (Carolan, Forbat, & Smith, 2016). As such, this permeability or fluidity requires an understanding of conducting MMCSR.

DEDUCTIVE APPROACH to MMCSR



INDUCTIVE APPROACH to MMCSR





What is Case Study Research?

Definition 1

Case Study is an in-depth exploration from **multiple perspectives** of the complexity and **uniqueness** of a particular project, policy, institution, programme, or system in a **real-life context**. It is research-based, **inclusive of different methods** and is evidence led. The primary purpose is to generate an **in-depth understanding** of a specific topic (Simons, 2009, p.10).

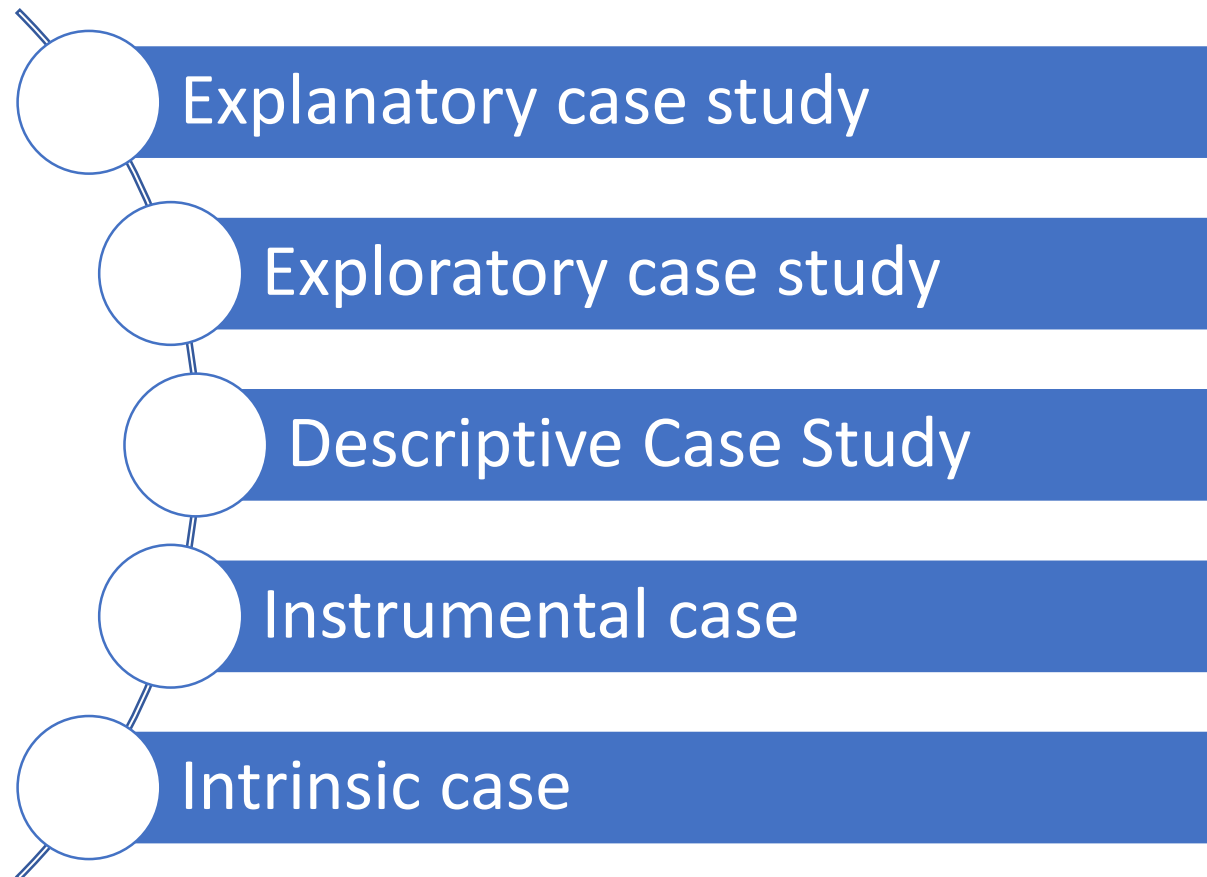
Definition 2

Case Studies "are a design inquiry found in many fields, especially evaluation, in which the researchers develops in-depth analysis of the case, often a programme, event, activity, process or, one or more individuals. Cases are **bounded by time and activity**, and researchers collect **detailed information** using a variety of data collection procedures over a **sustained period of time**"(Creswell, 2014, p.14).

What are elements of Case Study?

- In-depth study
- Bounded- “Edges that a researcher puts around the case.”
- Multiple sources and perspectives
- Real-Life Context
- Uniqueness relative to other cases

Purpose for using case study (Types of case study)



Explanatory case study

- An explanatory case study - explain a phenomenon or issue. These explanations may be context-specific
- The researcher first acknowledges that a case is multi-faceted; therefore doing a case study allows the opportunity to relate one bit of information to the next and so forth. The explanation then will be based on the interrelationships between these bits of data (Thomas, 2016).
- Explanatory explains how and why some sequence of events happened (Yin, 2014).

Exploratory case study

The exploratory case study according to Yin (2014) “is to identify the research questions or procedures to be used in a subsequent research study, which might or might not be a case study” (p.238).

Descriptive Case Study

Descriptive case study – the purpose is to describe a phenomenon in its real-world context (Yin, 2014)



Instrumental case

The purpose is that the case is a tool. The case is of secondary interest, it plays a supportive role, and it facilitates understanding of something else (Stake, 2005).



Intrinsic

This case study is not a means to an end, but instead, we study the case because we are interested in understanding the specific case. In other words, the case itself is of interest.



Definition of mixed methods case study research



Definition of MMCSR

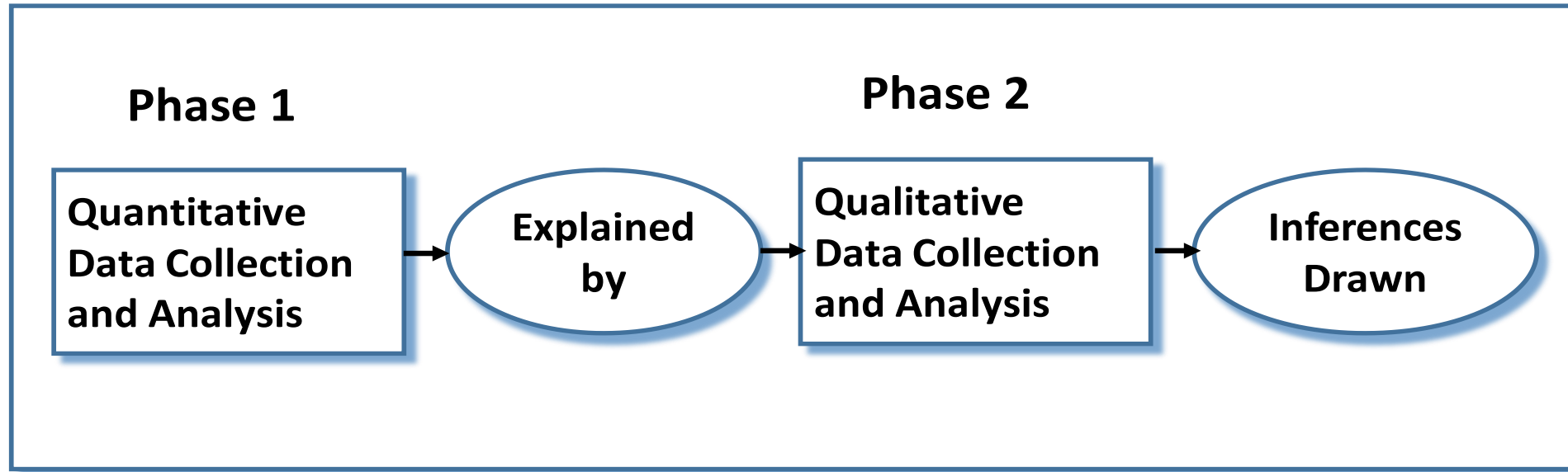
“A mixed methods case study design is a type of mixed methods study in which the quantitative and qualitative data collection, results, and integration are used to provide in-depth evidence for a case(s) or develop cases for comparative analysis” (Creswell & Plano Clarke, 2018, p.116).



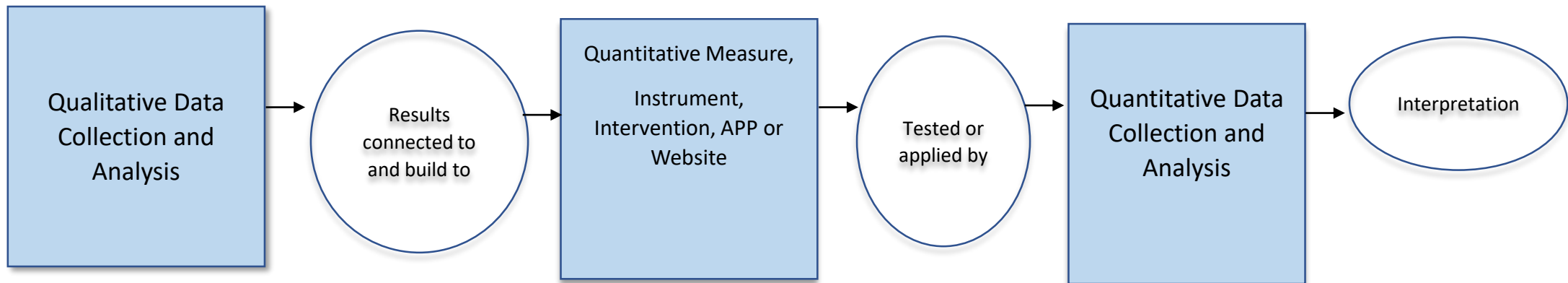
Core designs of MMR

- Explanatory sequential
- Exploratory sequential
- Concurrent

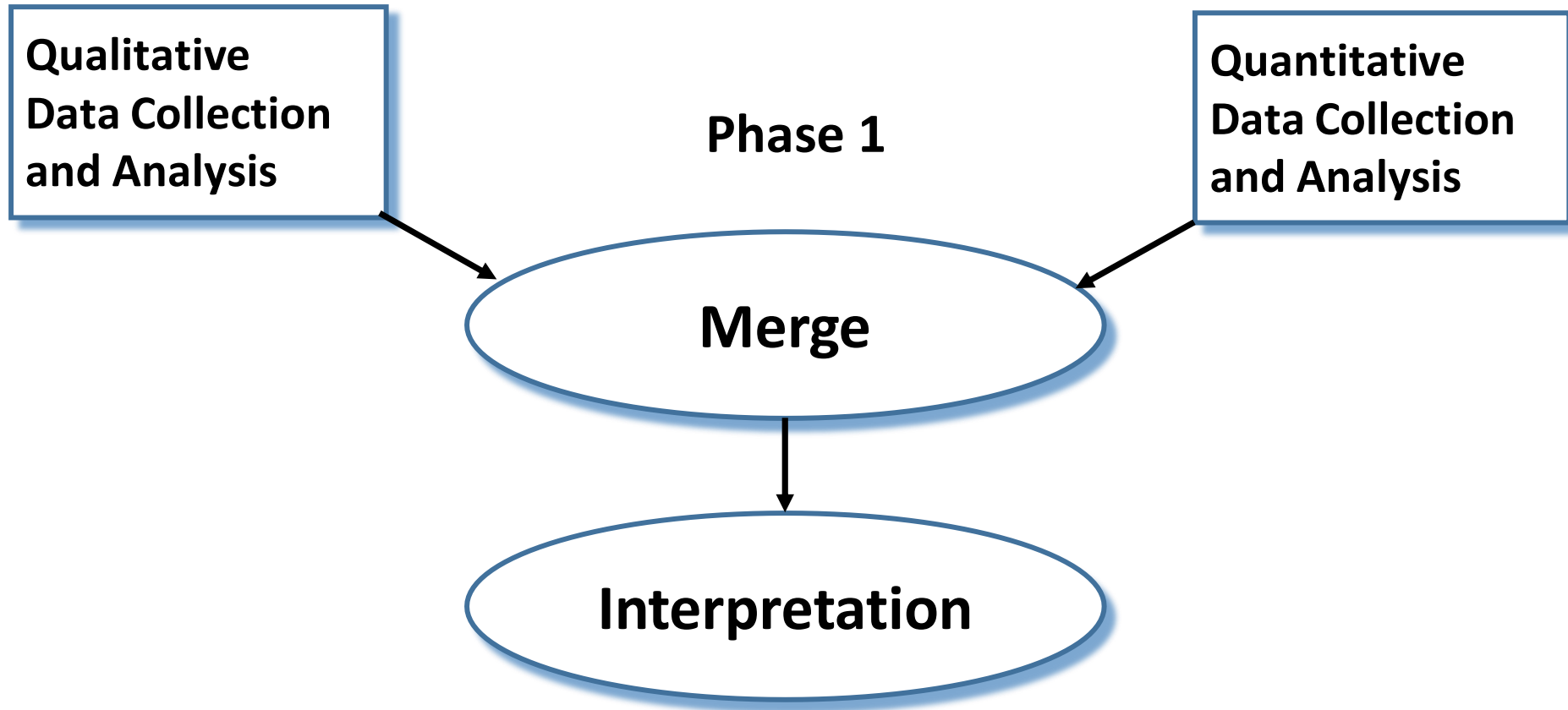
Explanatory Sequential Design



Exploratory Sequential Design



Convergent Design





Example 1:

Game-based Learning in STEM primary Classrooms: A Mixed Methods Case Study in Trinidad, West Indies

Kamalodeen, V.J., Jaggernauth, S.J., Kalloo. R., Ramsawak-Jodha, N., Abdul-Majied, S., Dedovets. Z., Figaro-Henry, S., & Barrow, D. (UWI, St. Augustine, Trinidad)



The Case Study

Purpose:

- The instrumental case study explored game-based learning (GBL) approaches in STEM classrooms in one primary school in Trinidad to provide methodological and procedural insights for the use of games in Math and Science classrooms.

Design

- The case (pilot study) acts as an instrument or tool to explore GBL and further understandings for implementation in a larger study of GBL in primary STEM classrooms (Stake, 2005)

Complex case

- games used for fun but not related to student attainment

DEDUCTIVE Approach to MMCSR

Approach

- Deductive as we decided on the the pilot study as an instrumental case, then decided on the mixed methods design within the case to collect, analyse and interpret data.

Bound (Creswell & Poth, 2018).

- Time: one year
- Central issue: GBL in the STEM primary classroom

(The primary school was selected only as an instrument to study this issue in depth)

The Mixed Methods design

Design

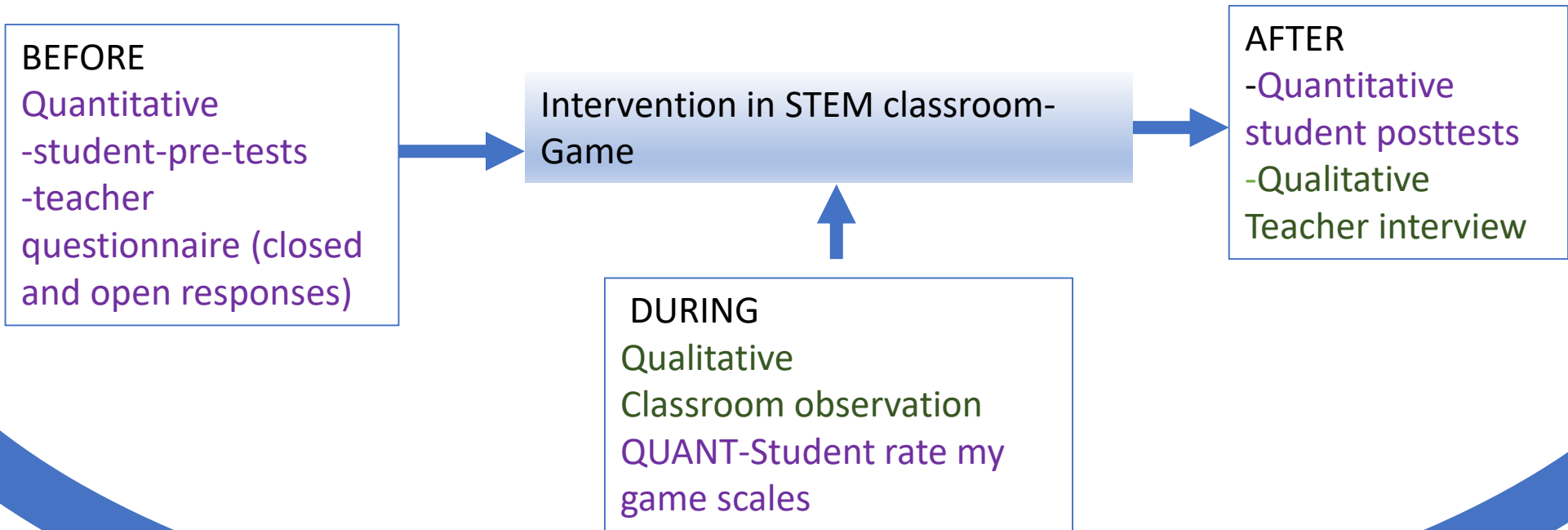
- Experiment/intervention design at 3 levels- Infants, std 3, std 5

Intent

- Qualitative data collection and analysis took place before, during and after the intervention to provide a contextual, holistic understanding of GBL.

Case: GBL in the STEM primary classrooms

Mixed methods intervention/experiment design



Rationale for mixed method design

Complementarity-

Student game ratings complemented student test achievement data

- Improved understanding of how participants were experiencing the games
- Identify issues and resources in implementation of games
- Make connections within STEM classrooms

Compare and Contrast-

classroom observation, student data, teacher data

- Understand context of the classroom, the students, the teachers, the games
- Improve fidelity of the implementation procedures
- Explain observations of what worked and what didn't

Strengths of this mixed methods case study design



GBL is a complex issue and the MMCSR allowed for a complex design of case study and mixed methods to come together



Allowed multiple researchers to gather data in the case at different times



Allowed for different research questions to be addressed



Allowed for greater understanding of GBL in STEM classrooms and was appealing to the funding agency

Challenges of this mixed methods case study design

Range of expertise of researchers

Time consuming-multiple entries to the classrooms- impacts completeness of DC

Complex designs require much effort to design and implement

Tensions in combining Case design and well as mixed methods experimental designs

Marginal but statistically significant increase in student attainment in Math and Science

Quantitative result



Students

- Responses revealed inconsistency in conceptual understandings
- enjoyed the games and rated them as 'fun' but 'challenging'
- Game design and mechanics are important for appeal
- Younger students benefit less from competitive nature of games



Teachers

- felt that the games were 'useful' in the classroom
- felt that students were engaged in learning Math and Science
- felt learning was achieved using the games
- Need PD in GBL

Qualitative outcomes



INTEGRATION AND INFERENCE

Positive student learning outcomes and favourable perspectives to GBL in STEM primary classrooms

Student age, teacher PD, game aesthetics and level of challenge are important factors in implementing GBL



Example 2: Students' Persistence in a distributed doctoral program in Educational Leadership in Higher Education: A Mixed Methods Study

Authors: Nataliya V. Ivankova and Sheldon Stick (2007)

Publication: Research in Higher Education, 48(1),93-135

Purpose of the study

The purpose of this study was to identify factors contributing to students' perseverance in the University of Nebraska-Lincoln Distributed¹ Doctoral Program in Educational Leadership in Higher Education



The Mixed Methods design

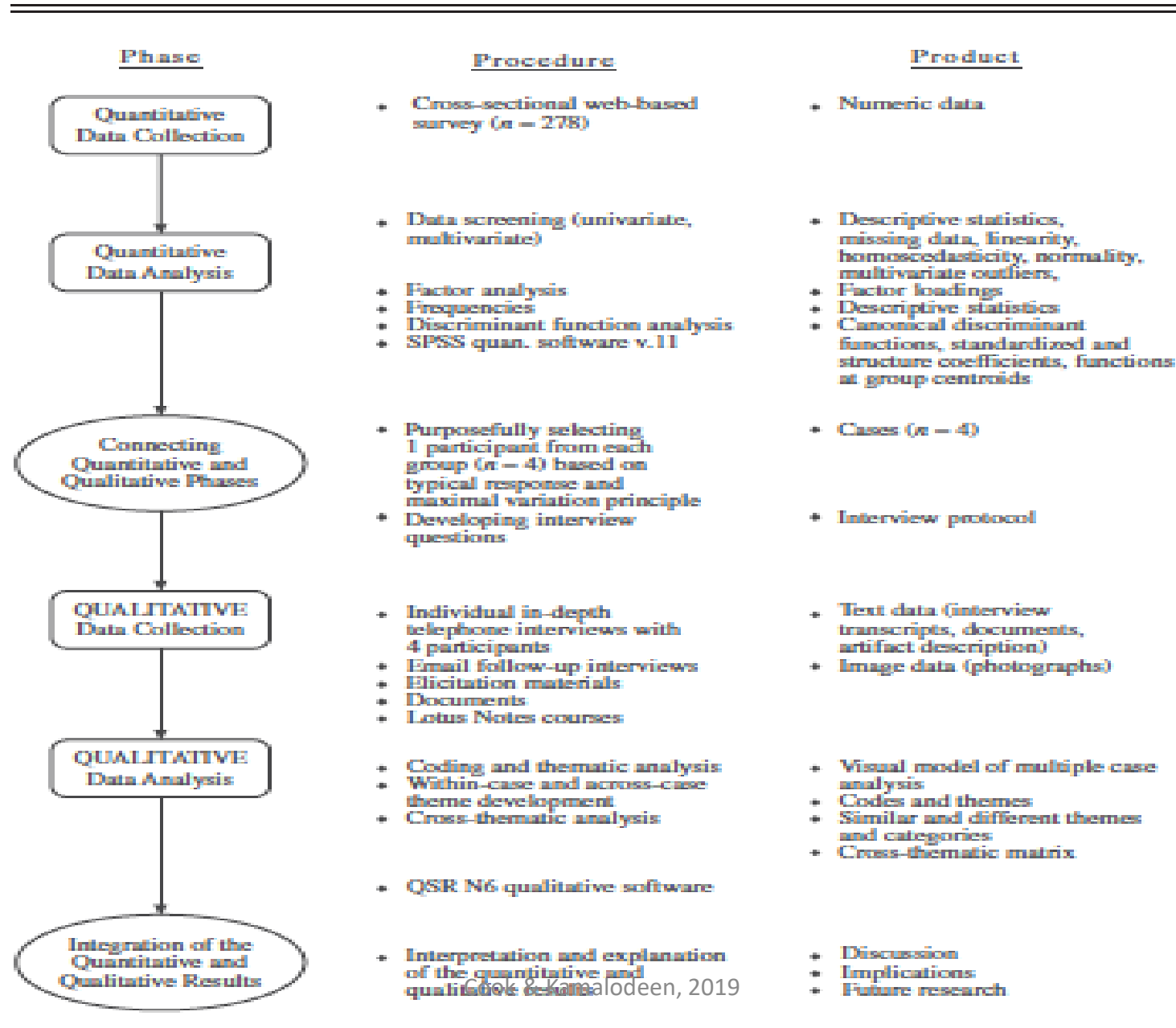
Design

- Explanatory sequential

Rationale for mixed methods:

- Mixed methods research was necessary because either the Quan or Qual only was sufficient to capture the complex situations that contributed to the doctoral students' perseverance in their study. Also, data collected using the two research approaches provided a more complete picture of the research issue.

FIGURE I
Visual Model for Mixed-Methods
Sequential Explanatory Design Procedures



Case Selection



The 207 participants were divided into four groups based on typical response and maximum variation principles.



Group 1: BEGINNING- students completed 30 or fewer credit hours of course work (n = 78)



Group 2: MATRICULATED -students who had completed more than 30 credit hours of course work (n=78)

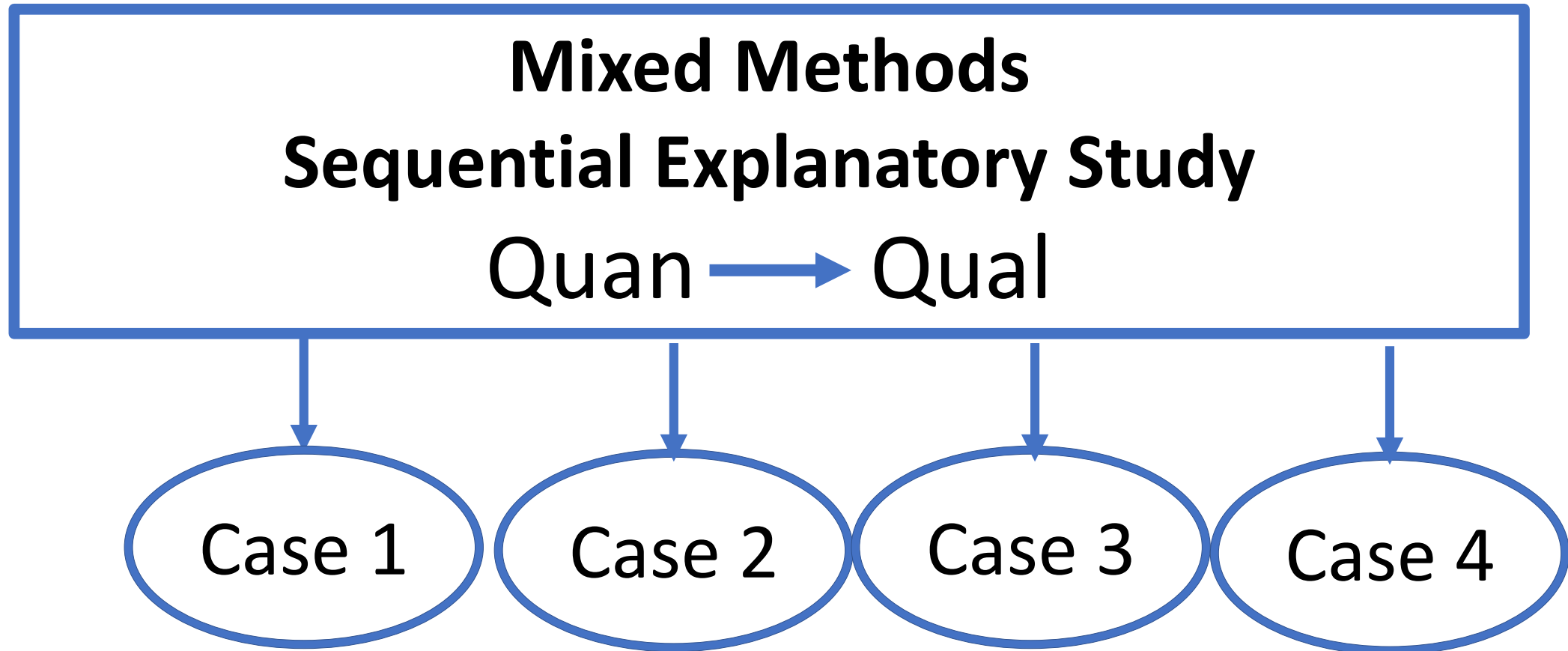


Group 3: GRADUATED-former students who had graduated from the program with the doctoral degree (n = 26)



Group 4: WITHDRAWN/INACTIVE-former students who either had withdrawn or had been terminated from the program or had been inactive during the last three terms (spring, fall, summer) before the survey administration (n = 25).

INDUCTIVE APPROACH to MMCSR



The Mixed Methods Case Study

Purpose:

- a multiple case study design. Each case was selected as a tool to illuminating a particular issue”(p.101). The case study was instrumental.

Bound

- “Each case study was bounded by one individual and by the time he or she matriculated in the ELHE program” (p.101).

Case Selection

- Typical respondents identified followed by maximum variation strategy to yield 4 groups and select 1 person per group for QUAL stage

Conclusion

- The integration of qualitative and quantitative findings in study identified internal and external factors related to student persistence.
- The researchers used an inductive approach to MMCSR

Summarizing and concluding the two studies


Study	MMSCR approach	Purpose of case study	Mixed methods design	Case selection	Participants
Kamalodeen et. al (2018)	Deductive	Instrumental	Intervention/ experimental	purposive	Students and teachers in one primary school
Ivankova et al. (2006)	Inductive	Instrumental	Sequential explanatory	Typical Maximum variation	Doctoral students in educational leadership at a university



Thank you



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