

**DEFENCE RESEARCH  
METHODOLOGY**

**MIXED METHOD  
RESEARCH PROBLEMS  
AND SAMPLE**

**VOLUME 2**

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CIQaR ., CIQnR ., MOS., MCE., CIMMR**

**PENERBIT CV. AKSARA GLOBAL AKADEMIA  
2022**

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**2022**

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## MIXED METHOD RESEARCH PROBLEMS AND SAMPLE

### (Volume 2)

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# PREFACE

My praise and thank for Alloh S.W.T, because of given so that we can complete this Defense Research Methodology book well. The purpose of writing this book is none other than to assist in understanding the material regarding the methods used in conducting research in the field of defense science studies which is one of the important things for the success of a research.

The authors would like to thank the publisher, family, colleagues and readers wherever they are, I hope this book is useful and can be used as reference material in the research being asked. Perfection belongs to Allah, of course there are still many shortcomings in this paper, so and suggestions that are built, we expect criticism for the improvement of this book.

Jakarta, September 2022

**Major General Dr. Budi Pramono, S.I.P., M.M, M.A., (GSC)., CIQaR., CIQnR**

# SYNOPSIS

Mixed methods research offers a practical approach to addressing research problems and questions and the potential for increased applicability because these problems and questions are examined in different ways. After considering the purposes of mixed methods and the characteristics that can be useful in determining which design to use, specific types of designs will be discussed, and selected studies exemplifying these designs will be presented. In mixed methods, the research questions require narrative and numeric information. Two or more questions are generated; at least one question elicits narrative data (QUAL), and at least one question elicits numeric data (QUAN). Along with the QUAN research question, a research hypothesis may be generated to reveal predictions about the phenomenon before the study begins. For a study using the parallel mixed design, research questions will be generated before the study begins; for a study using a sequential mixed design, additional research questions may emerge as the study progresses.

Mixed methods sampling requires an understanding and acknowledgment of the sampling strategies that occur in QUAN and QUAL research. Probability sampling techniques are used most often in QUAN research to obtain a sample that most accurately represents the entire population. Purposive sampling techniques are used mainly in QUAL research to select participants or other units of study who can provide or yield data that will address the research questions.

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# Unit 1



## INTRODUCTION



## A DEFINITION

- *Mixed methods research is both a method and methodology for conducting research that involves collecting, analyzing, and integrating quantitative and qualitative research in a single study or a longitudinal program of inquiry.*
- *The purpose of this form of research is that both qualitative and quantitative research, in combination, provide a better understanding of a research problem or issue than either research approach alone.*



# DIFFERENCES BETWEEN QUANTITATIVE AND QUALITATIVE METHODS

	<b>Quantitative methods</b>	<b>Qualitative methods</b>
<b>Epistemological positions</b>	Objectivist	Constructivist
<b>Relationship between researcher and subject</b>	Distant /outsider	Close/insider
<b>Research focus</b>	'Facts'	Meanings
<b>Relationship between theory/concepts and research</b>	Deduction/confirmation	Induction/emergent
<b>Scope of findings</b>	Nomothetic	Ideographic
<b>The nature of data</b>	Data based upon numbers	Data based upon text

# EPISTEMOLOGICAL POSITIONS

- Quantitative research emanates from an objectivist position which holds that reality exists independently of the researcher – the truth is ‘out there’.
- Qualitative research is more closely linked to a constructivist paradigm, which sees truth and meaning as constructed and interpreted by individuals.

# RELATIONSHIP BETWEEN RESEARCHER AND SUBJECTS

- Quantitative research, researchers aim to keep themselves at a distance (emotional/physical) from those they are researching
- Qualitative research usually involves direct contact between researcher and those they are researching, sometimes for long periods of time.

# RESEARCH FOCUS

- Quantitative research concentrates on the gathering of 'facts', in order that 'truth claims' can be established.
- Qualitative researchers contend that truth and meaning do not exist in some external world, but are constructed through peoples' interactions with the world

# SCOPE OF FINDINGS

- Quantitative methods are regarded as nomothetic which attempts to establish law-like findings that hold irrespective of time
- Qualitative research is ideographic which locates its findings in specific time periods and localities and is much more concerned with the depth and intensity of findings rather than breadth (generalizability)

# THE NATURE OF DATA

- Quantitative studies generate data in the form of numbers, often depicted positively as reliable and rigorous, probably because of their association with 'science'.
- Qualitative research generates what is claimed to be 'rich' or 'deep' data, usually in the form of text but sometimes in photographs, maps or other visual media.

# MIXED METHOD FUNCTION

- Generalise from a sample to a population (as in quantitative research)
- Gain a richer, contextual understanding of the phenomenon being researched (as in qualitative research)

# HOW METHODS CAN BE MIXED

<b><i>Types of mixing</i></b>	<b><i>Comments</i></b>
Two types of research question	One fitting a quantitative approach and the other qualitative
The manner in which the research questions are developed	Preplanned (quantitative) versus participatory/emergent (qualitative)
Two types of sampling procedure	Probability versus purposive
Two types of data collection procedures	Surveys (quantitative) versus focus groups (qualitative)
Two types of data analysis	Numerical versus textual (or visual)
Two types of data analysis	Statistical versus thematic
Two types of conclusions	Objective versus subjective interpretations



## Unit 2



# QUANTITATIVE AND QUALITATIVE DATA ANALYSIS



# QUANTITATIVE AND QUALITATIVE DATA ANALYSIS

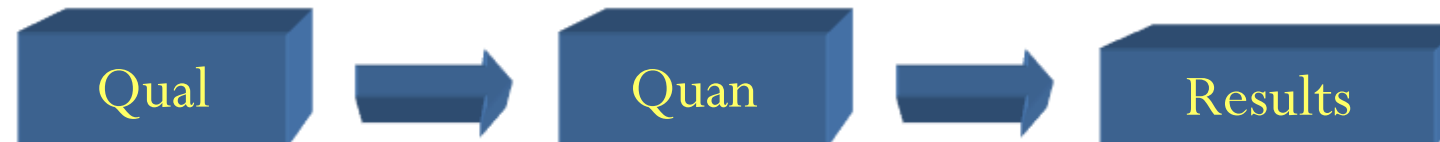
- Quantitative analysis
  - Use statistical analysis,
  - For description
  - For comparing groups
  - For relating variables
- Qualitative analysis
  - Use text and images,
  - For coding
  - For theme development
  - For relating themes

# MIXING OR LINKING THE DATA

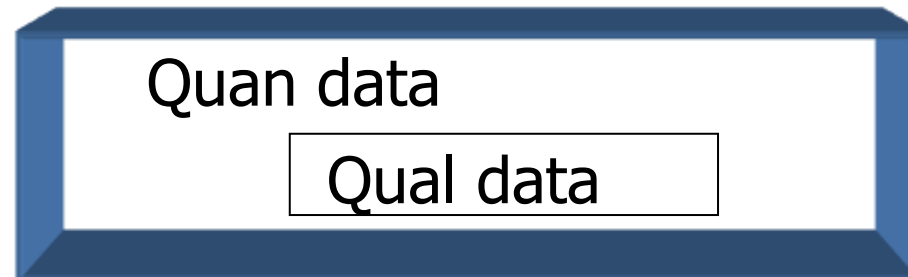
## Converge data:



## Connect data:



## Embed the data:



# TYPICAL SITUATIONS IN WHICH MIXED METHODS IS USED

- To compare results from quantitative and qualitative research
- To use qualitative research to help explain quantitative findings
- To explore using qualitative research and then to generalize findings to a large population using quantitative research
- To develop an instrument because none are available or useful
- To augment an experiment with qualitative data

# WHAT IS THE REASON FOR USING MIXED METHODS?

- The insufficient argument – either quantitative or qualitative may be insufficient by itself
- Multiple angles argument – quantitative and qualitative approaches provide different “pictures”
- The more-evidence-the-better argument – combined quantitative and qualitative provides more evidence
- Community of practice argument – mixed methods may be the preferred approach within a scholarly community
- Eager-to-learn argument – it is the latest methodology
- “Its intuitive” argument – it mirrors “real life”

# DESIGNING A MIXED METHODS STUDY

- Preliminary considerations
- Creating a title
- Posing a general question
- Listing the types of data collection and analysis
- Making explicit your worldview
- Identifying your research design
- Drawing a figure of your design
- Writing a purpose statement
- Writing research questions
- Completing a research plan

# PRELIMINARY CONSIDERATIONS (BEFORE YOU BEGIN TO DESIGN)

- Research problem
  - Content – any topics
  - Fit the problem to mixed methods (arguments)
- Access to both qualitative and quantitative data
- Background and resources
- Receptive audience

# POSE THE GENERAL QUESTION TO BE ANSWERED

- Write it as a question
- Look to see how it is phrased
- Make sure that it is specific enough and focused (an answerable question)
- Ask yourself, “when I end the study, what question would like to have answered?”



## LIST YOUR TYPES OF DATA COLLECTION (A REVIEW)

- Quantitative data (closed-ended)
  - Instruments
  - Behavioral checklists
  - Records
- Qualitative data (open-ended)
  - Interviews
  - Observations
  - Documents
  - Audio-visual materials

# LIST YOUR APPROACH TO DATA ANALYSIS (A REVIEW)

- Quantitative analysis
  - Use statistical analysis,
  - For description
  - For comparing groups
  - For relating variables
  - Design-type
- Qualitative analysis
  - Use text and images,
  - For coding
  - For theme development
  - For relating themes
  - Design-type

# DETERMINE YOUR WORLDVIEW...

<p><b><u>Postpositivism</u></b></p> <ul style="list-style-type: none"><li>•Determination</li><li>•Reductionism</li><li>•Empirical observation and measurement</li><li>•Theory verification</li></ul>	<p><b><u>Constructivism</u></b></p> <ul style="list-style-type: none"><li>•Understanding</li><li>•Multiple participant meanings</li><li>•Social and historical construction</li><li>•Theory generation</li></ul>
<p><b><u>Advocacy/Participatory</u></b></p> <ul style="list-style-type: none"><li>•Political</li><li>•Empowerment issue-oriented</li><li>•Collaborative</li><li>•Change-oriented</li></ul>	<p><b><u>Pragmatism</u></b></p> <ul style="list-style-type: none"><li>•Consequences of actions</li><li>•Problem-centered</li><li>•Pluralistic</li><li>•Real-world practice oriented</li></ul>

# SEVERAL STANCES ON PHILOSOPHY IN MIXED METHODS...

- One paradigm (pragmatism, transformative) (Tashakkori & Teddlie, 2003; Mertens, 2003)
- Multiple paradigms (dialectic perspective) (Greene, 2007)
- Linking paradigms to design features) (Creswell & Plano Clark, 2007)
- Epistemological stance (ontology, epistemology, axiology, methodology) (Guba & Lincoln, 2005)
- Shared beliefs in a research field (Morgan, 2007)
  
- What it is
- How it informs your study

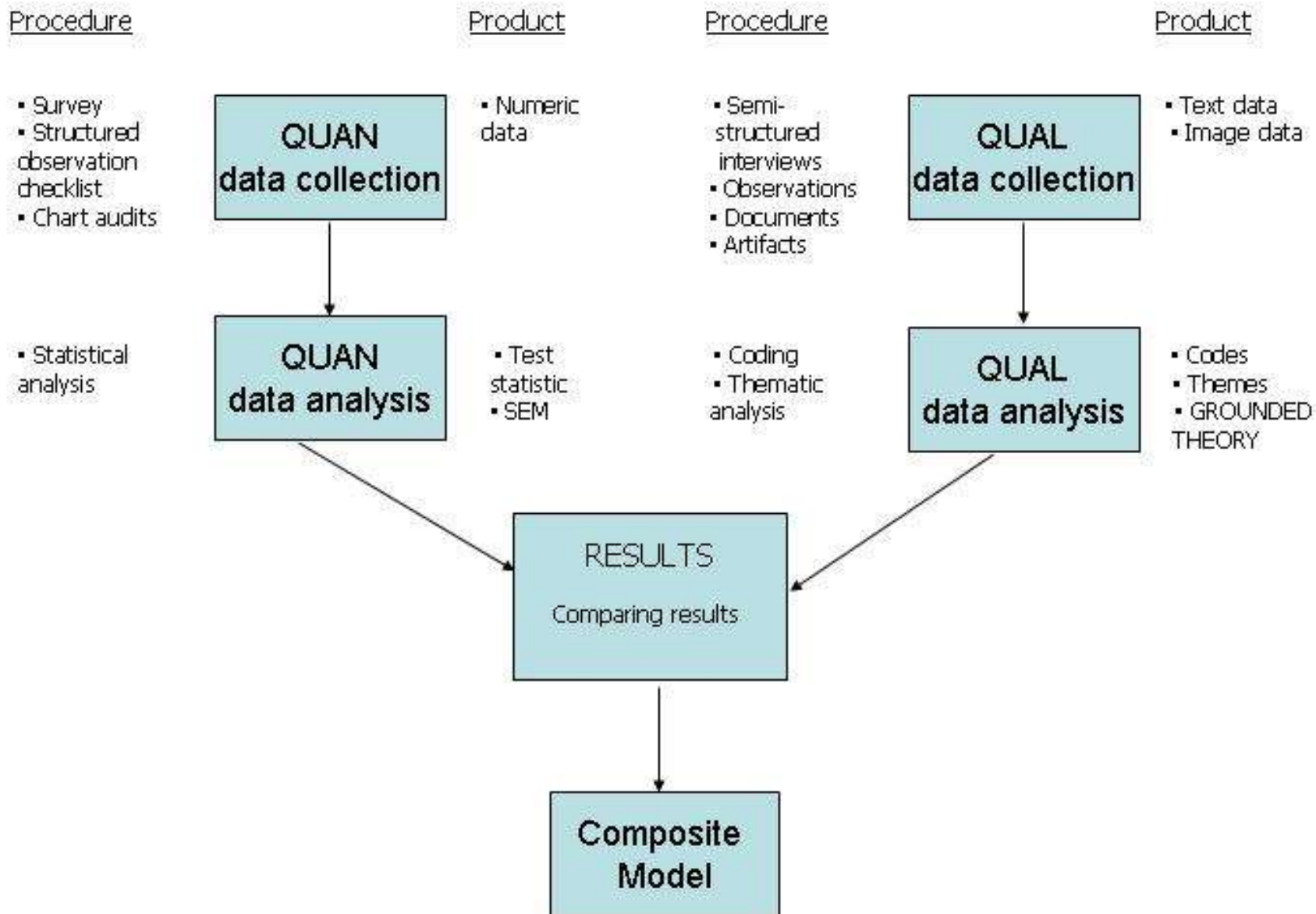
# MAKE EXPLICIT YOUR INTERPRETIVE LENS (THEORY)

- Advocacy lens (feminist, racial, ethnic, disability, sexual orientation) (Mertens, 2003)
- Social science lens (social science theory)
- Components:
  - What is it
  - Who has used it in your field
  - How it will shape your study (rephrase your guiding research question, if a lens applies)

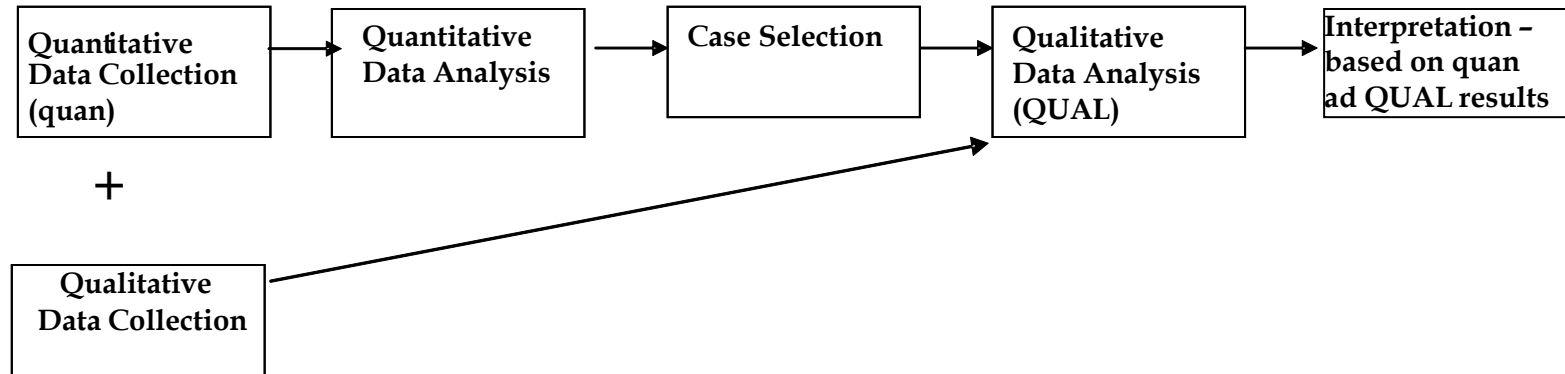
# STATE YOUR PROCEDURES (METHODS)

- Procedures for handling your qualitative and quantitative data
- Sequence – concurrent or sequential or both
- Emphasis – emphasis on qualitative or quantitative
- Sometimes both concurrent and sequential phases are used
- Designs may include more than two phases
- Think about using a simple, elegant design

# Concurrent Triangulation Design Visual Model



# EXPLANATORY SEQUENTIAL DESIGN

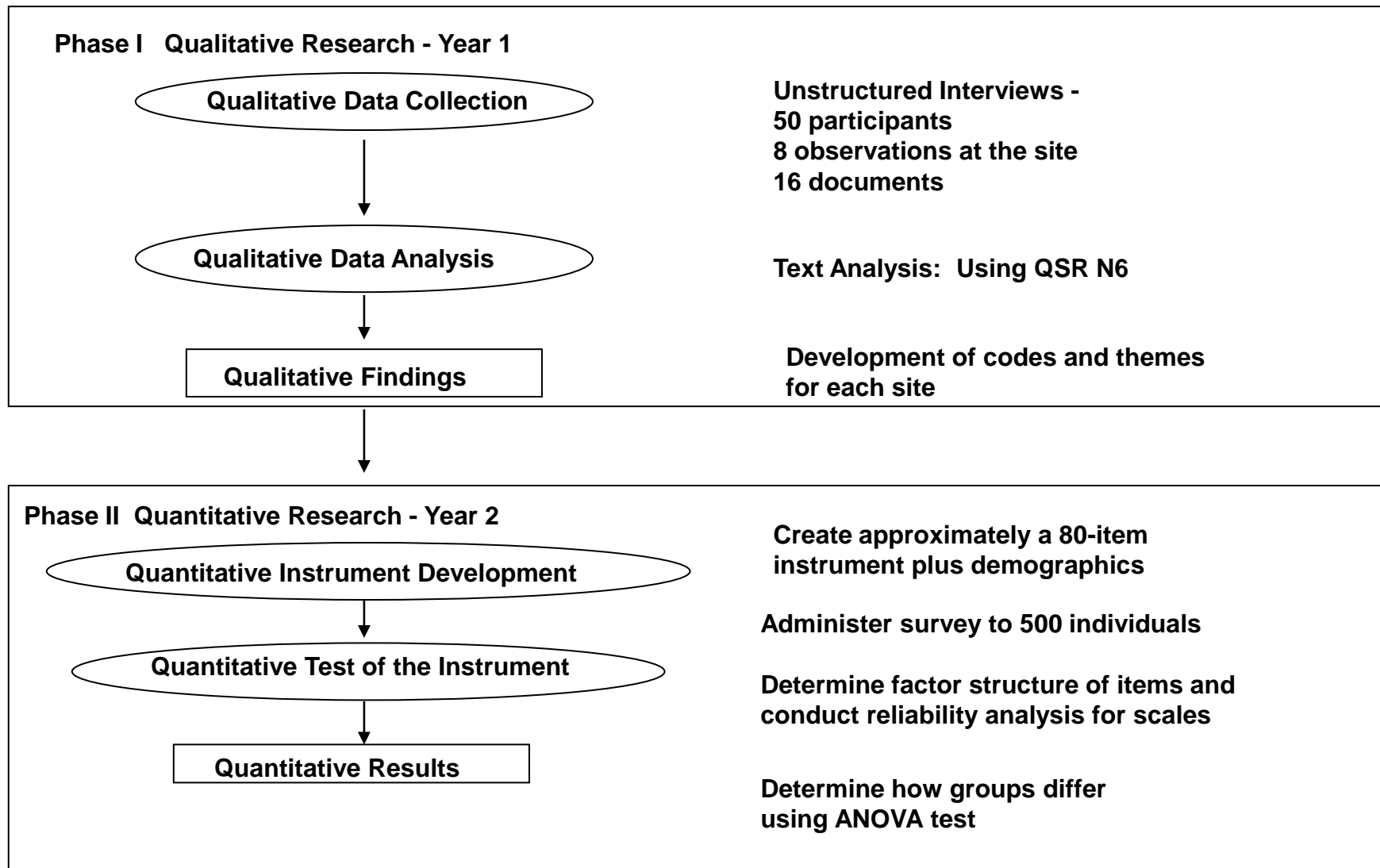


<u>Quantitative Data*</u>	<u>Quantitative Analysis</u>	<u>Case Selection</u>	<u>Qualitative Analysis</u>	<u>Interpretation</u>
Number of cigarettes CES-D6	Graphic plot of CES D6 scores over time for each participant	Selected 5 cases maximally varying Identified critical months in which smoking varied	Description of each case Identification of life events occurring during critical months where smoking increased or decreased Thematic analysis of life events for each case Cross-case thematic analysis	Why did changes in smoking occur?
<u>Qualitative Data*</u> Semistructured interviews, audio recorded and transcribed	Graphic plot of cigarettes/day values over time for each participant			

\* Data collected 10 times over the course of a calendar year for 40 participants

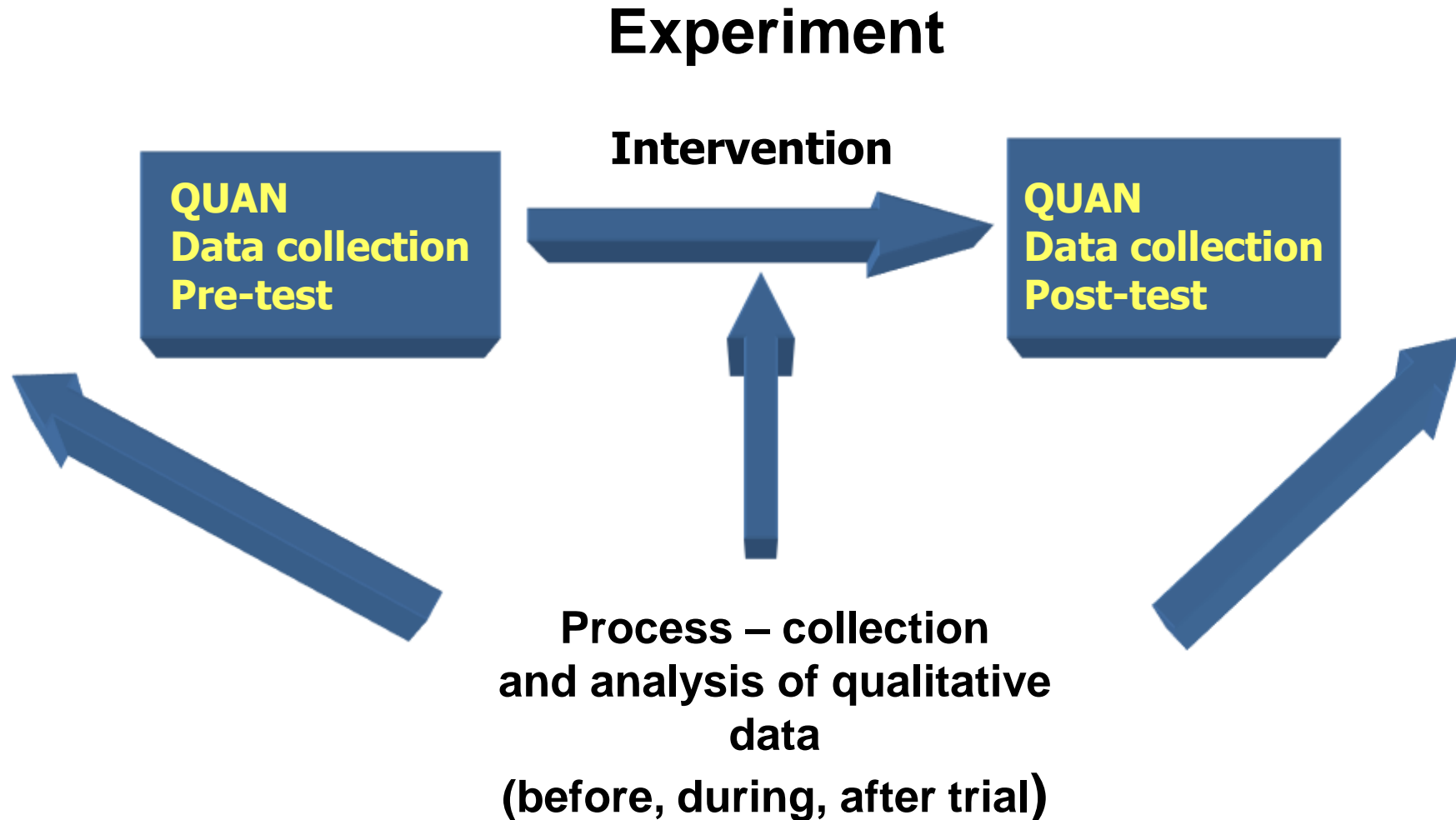
Source: Creswell, Plano Clark, Shope, McVea. (in progress)





# EXPLORATORY SEQUENTIAL DESIGN

# EMBEDDED RESEARCH DESIGN



# MIXING THE QUAN AND QUAL DATA

Type of Mixing	Type of Design	Why Mixing Occurs	Where Mixing Occurs in Research Process
Connecting	Sequential	One phase builds on the other	Between data analysis (Phase 1) and data collection (Phase 2)
Merging	Concurrent	Bring results together	After analysis of both quan and qual – typically in discussion
Embedding	Sequential or Concurrent	Either building or bringing results together	Either between phases or in discussion after analysis

## Unit 3



# METHODOLOGICAL ISSUES



# METHODOLOGICAL ISSUES

- Concurrent Designs
  - Use strategies to explore contradictory findings
  - Use parallel questions
  - Select sub-sample of quantitative for qualitative
  - Be sensitive to bias from one data collection to the other
- Sequential designs
  - In Explanatory Design, select qual sub-sample from quan sample
  - In Explanatory Design, consider alternatives for followup qual sampling
  - In Exploratory Design, samples can differ
  - In Exploratory Instrument Design, consider qual data analysis approaches for developing instrument

# Unit 4



## A MIXED METHODS RESEARCH PROBLEMS



# HOW TO WRITING RESEARCH QUESTIONS/HYPOTHESES IN MIXED METHODS RESEARCH?

- Write qualitative research questions and write quantitative research questions/hypotheses
- Also write a mixed methods research question
- Write these questions separately

# A NEW TYPE OF RESEARCH QUESTION: A MIXED METHODS QUESTION

Three ways to write this question:

Methodologically-focused:

- To what extent do the qualitative results confirm the quantitative results?

Content-focused:

- How do the interviews with adolescent boys support the quantitative results that their self-esteem changes during the middle school years?

Hybrid of quantitative and qualitative elements:

- What results emerge from comparing the exploratory qualitative data about boy's self-esteem with outcome quantitative instrument data measured on a self-esteem instrument?



# QUALITATIVE RESEARCH PROBLEMS QUESTIONS?

- Qualitative central question
  - Begin with “what” or “how”
  - Focus on single phenomenon
  - Use exploratory verbs (discover, understand, explore)
  - Non-directional language
  - A general question (allowing participants’ perspectives to emerge)

# QUANTITATIVE RESEARCH PROBLEMS QUESTIONS?

- Can be hypotheses or questions
- State variables – independent, dependent, mediating, covariates
- Develop from theory
- Use distinct measures for independent and dependent variables
- Order variables from independent to dependent

# ACKNOWLEDGING CONTROVERSIES RELATED TO DATA TRANSFORMATION

1. QUANT people object to statistical analysis that is based on a small, non representative sample.
2. Some QUAL researchers strongly object to quantifying qualitative data as context stripping and overly simplifying complex phenomenon.
3. Mixed methods people challenge the idea that quantifying by reporting frequency counts themes or categories qualifies as mixing.

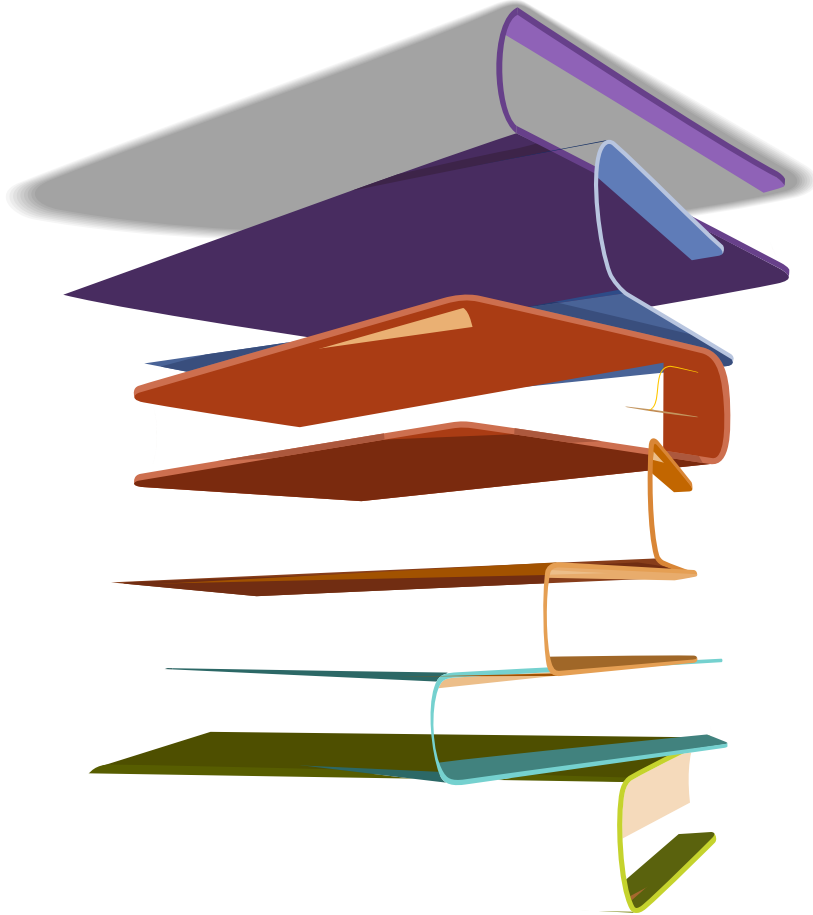
## Unit 5



# CASE ISSUE



# CASE STUDY RESEARCH



- “An empirical inquiry that investigates a contemporary phenomenon within the real life context; when boundaries between the phenomenon and the context are not clearly evident; and in which multiple sources of data are used (Yin, 1984, p. 23)

# COMPATIBILITY OF MIXED METHODS WITH CASE STUDY RESEARCH

- Case study is described as an approach that spans paradigms; not a method or methodology.
- They are generally constructed with multiple types of data (observation, documents, archival data, interviews, and sometimes physical artifacts).
- Can readily combine qualitative and quantitative approaches to sampling procedures
- If a type of qualitizing when it involves building a profile that weaves together a number of quantitative indicators with qualitative data.
- Can facilitate mixing, though the inclusion of numbers does not in itself amount to mixing.

# DESIGN FEATURES OF THE CHAPTER EXEMPLAR USING CASE STUDIES BY COOPER (2015)

Design Feature	
Rationale/Purpose	Development
Priority	Quantitative
Timing of Data Collection	Sequential (Multi-phase)
Timing of Data Analysis	Sequential (Multi-phase)
Mixing	Fully Integrated- Mixing at all Stages

# TYPES OF MIXING IN THE CHAPTER EXEMPLAR USING CASE STUDIES BY COOPER (2014)

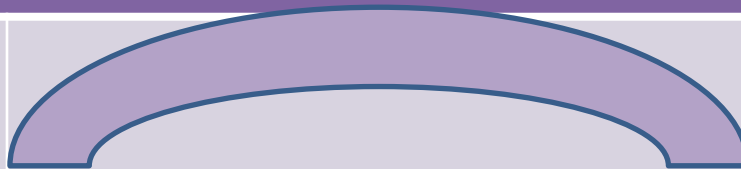
Phase of the Research Process	Type of Mixing
Design/Research Question	One qualitative; one quantitative research question.
Sampling	Survey data used to select schools for case studies
Data Collection	Survey data used to select classrooms for case studies.
Data Analysis	Concept maps for each classroom created.
Drawing Conclusions/Inferences	A meta-inference was produced from the cross-case comparisons.



# MIXING AT THE INFERENCE STAGE: META INFERENCE IN THE CHAPTER EXEMPLAR BY COOPER (2014)

**META INFERENCE:** Characteristics of the teaching approach are much more strongly related to student engagement than characteristics of the student.

QUAL Conclusion: Connected instruction that was not supplemented with academic challenging activities produced lower levels of student engagement.



QUANT Conclusion: Connected learning had a much stronger connection to student engagement than other teaching practices.

# Unit 6



CONCLUSION



# CONCLUSION

- Mixed methods research problems and Sampling have traditionally been associated with conflicting research paradigms based upon different epistemological positions
- Many researchers now recognize that quantitative and qualitative approaches can be combined into a mixed methods design
- Mixed methods approaches
  - can be based upon different types of research question, sampling procedures, data collection methods or approaches to data analysis
  - are flexible and can include sequential designs with quantitative methods preceding qualitative, or vice versa, or concurrent designs
  - should be based upon the kinds of questions being addressed and how the design can aid in the answering of these questions

# LESSONS LEARNED

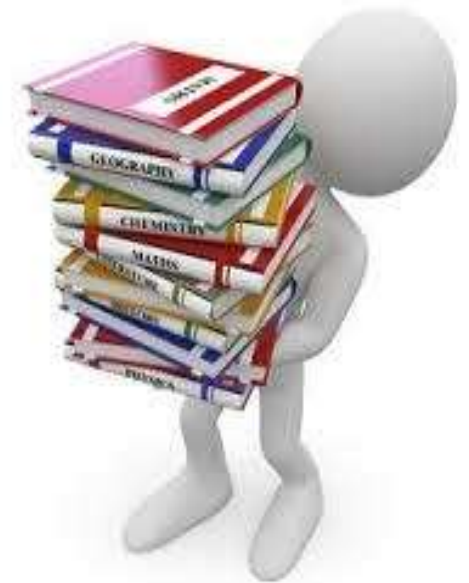
- Mixed method research problems and sampling encourages researchers to do collaboration, which research does not do much both quantitative and qualitative. The collaboration is social collaboration, behavioral, and humanistic collaboration.
- Mixed method research problems and sampling encourages the use of different perspectives or paradigms.
- Mixed method research problems and sampling is “practical” because researchers have freedom to use methods to research problems.

# QUESTIONS

- What objections do some qualitative researchers raise about data transformation?
- What restricts the ability to use transformed qualitative data for purposes of statistical analysis?
- Why is case study an approach that is well suited to mixed methods?

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# About The Author

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**Dr. Budi Pramono, SIP., M.M., M.A., (GSC), CIQar., CIQnR., MOS., MCE., CIMMR.**

Born in Sidoarjo in 1967. He holds two Masters degrees, at Hull University UK in the Field of Security and Strategic Studies (1998) and the University of National Development Veterans Jakarta (2005). When he was a colonel, he was awarded a doctorate degree in Political Science with a very good predicate. After graduating from the Magelang Military Academy in 1988, he served in the Indonesian Army Strategic Forces (KOSTRAD) for ten years, then took part in the intelligence world (BAIS).

The author has a lot of experience taking various Military Education courses, some of which are: Austfamil Course (SUSLAPA II-ART) Australia (1996), National Security Intelligence Training Course in Taiwan (1999), Command and General Staff College, School of General Staff and Command in Manila (2001), best graduate with awards (Honor Graduate): United Nations logistics Course at Port Dickson (2002), Austfamil Course at Laverton Australia (2003), and Emergency Management in Australia, UN Military Observer Course, Port Dickson (2004). In addition to being a frequent speaker at national and international conferences, as well as conducting scientific research, the author has also been actively writing many books, including: "Transformation of Indonesia Counter-Terrorism" (Terrorism and Disaster, Rajawali Pers, 2018), "The Role of Indonesia in Asean Security", (Terrorism and Disaster, Rajawali Pers, 2018), "Tanpa Senjata: Konsep dan Praktik Operasi Militer Selain Perang di Indonesia" (UNHAN Press, 2021, ISBN: 978-623-6610-26-8)), "Monograph Indonesian Politics : Since it's Birth Till The Reformation Era" (Aksara Global Akademia, 2021, ISBN: 978-623-96683-9-6 (PDF)), "Politics & National Defense" (Aksara Global Akademia, 2021, ISBN: 978-623-6387-00-9), "Pengukuran Kinerja Sumber Daya Manusia: Teori dan Aplikasi" (Aksara Global Akademia, 2021, ISBN: 978-623-6387-01-6 (PDF)), "The revolution in Military Affairs (RMA), and The Consequences for Indonesia: The Study Before the Reform Era" (Aksara Global Akademia, 2021, ISBN: 978-623-6387-05-4 (PDF)). Currently the author works as a Permanent Lecturer at the Republic of Indonesia Defense University and continues to take part in carrying out the Tri Dharma of Higher Education.

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# SINOPSIS

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