

# Science Teachers' Professional Identity in East-Asia Regions

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# Science Teachers' Professional Identity In East-Asia Regions



Quantitative Qualitative Design

# Outline

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- ▶ What's the professional identity?
- ▶ Values of this research
- ▶ Theoretical Framework
- ▶ Research Questions
- ▶ Research Design
- ▶ Expected Outcomes
- ▶ Implications



# Mode of Cooperation

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- ▶ **Regional Cooperation**

- ▶ Utilizing the geographical convenience for data collection of different

- ▶ **Specialization Cooperation**

- ▶ Quantitative and qualitative specialization



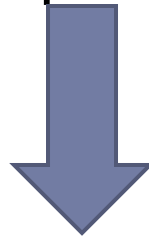
# What's the professional identity?

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## Literature review



- Teacher professional identity was related to teachers' concepts or images of self. (*Knowles, 1992; Nias, 1989*)
- Teacher professional identity is defined as the commitment of teachers to their professional practices. (*Cheung, 2008*)



**Teacher perceptions of their commitment**



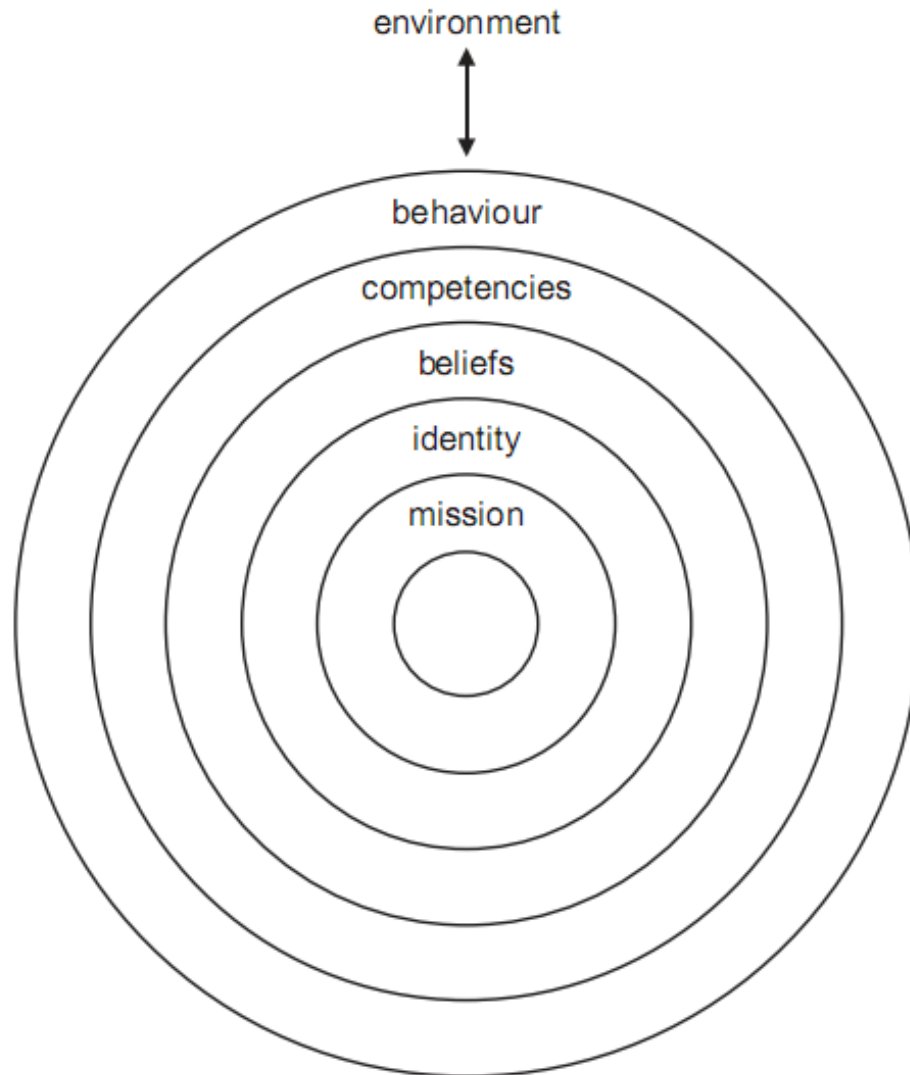
# Values of this research

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- ▶ It is important to know what teachers think, what their beliefs are. (Clark, 1986; Pajares, 1992)
- ▶ 21<sup>st</sup> science education reform effort
- ▶ Affects pedagogy and teaching (Agee, 2004; Karthagen, 2004)



# Theoretical Framework



(Korthagen, 2004)

- ability and efficacy;
- professional development;
- willingness to cope with educational change;
- willingness to implement innovations in teaching practice



Teachers' perceptions  
of their own  
professional identity

(Beijaard, Verloop, Vermunt, 2000)

# Modified Framework

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# Research Questions

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- ▶ What are the kinds and levels of professional identity among teachers prevails in different regions?
- ▶ What factors correlates with different identity in different regions?
- ▶ What are the differences of professional identity and factors affecting professional identity among different region?



# Rationale

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- ▶ **Qualitative Quantitative Mixed method**

- ▶ Qualitative study

- ▶ captures the richness of the data sources
    - ▶ time consuming to administer across region

- ▶ Quantitative

- ▶ Easy to be administered
    - ▶ Detached from the context and reality

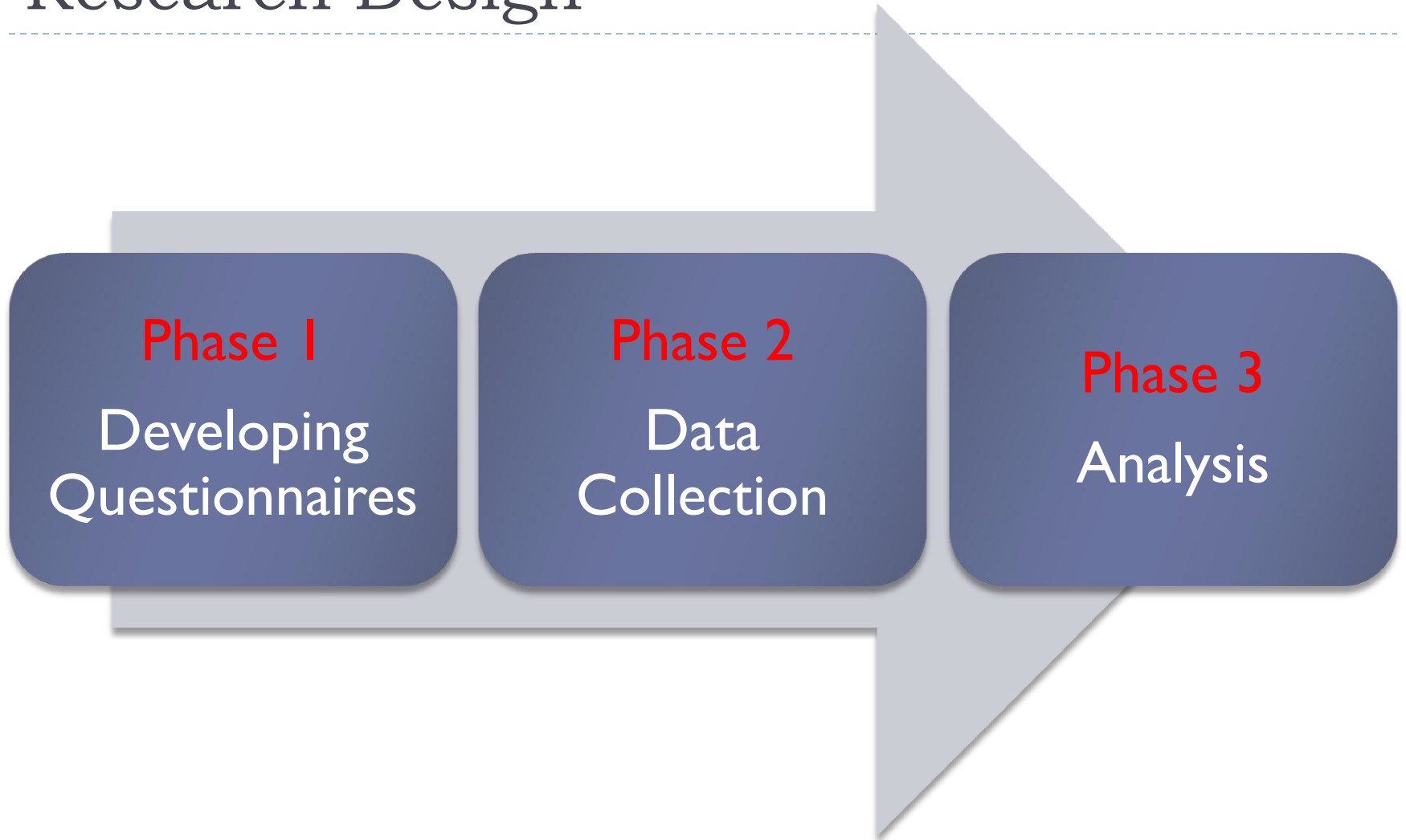
- ▶ **A Mixed method**

- ▶ Generated quantitative measure from qualitative study enables relevance while can be easily administered across region



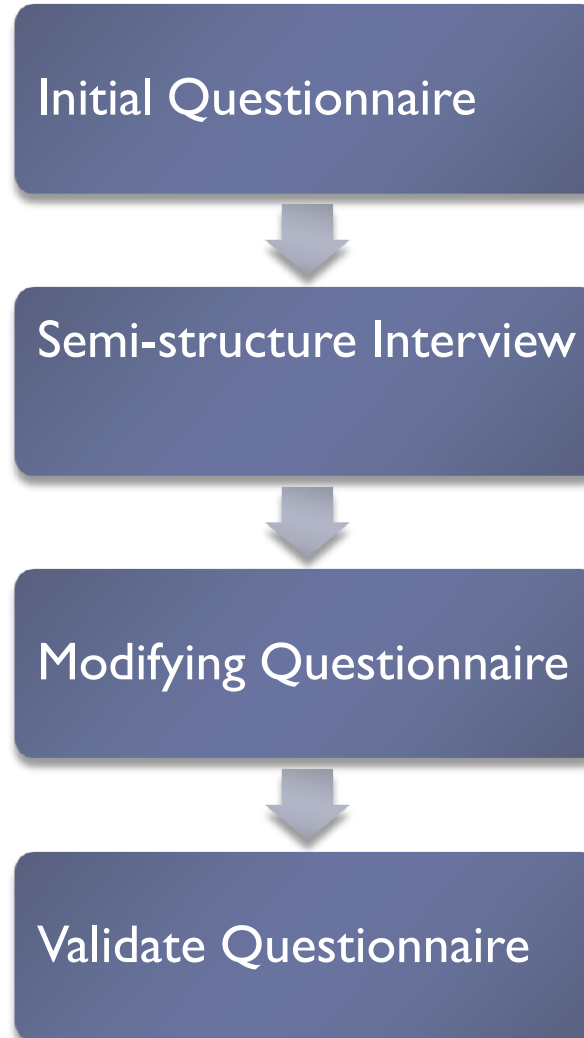
# Research Design

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# Phase 1 Developing Quantitative Questionnaires

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# Semi-structure interview

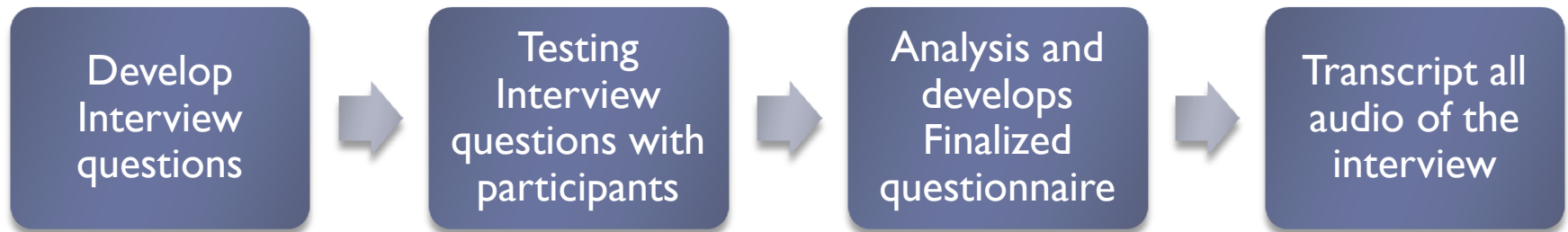
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- ▶ Purpose Sampling
  - ▶ Different teaching experience
    - Pre-service
    - 5 years
    - 10 years
  - ▶ Secondary School
- ▶ All interviews will be audiotaped



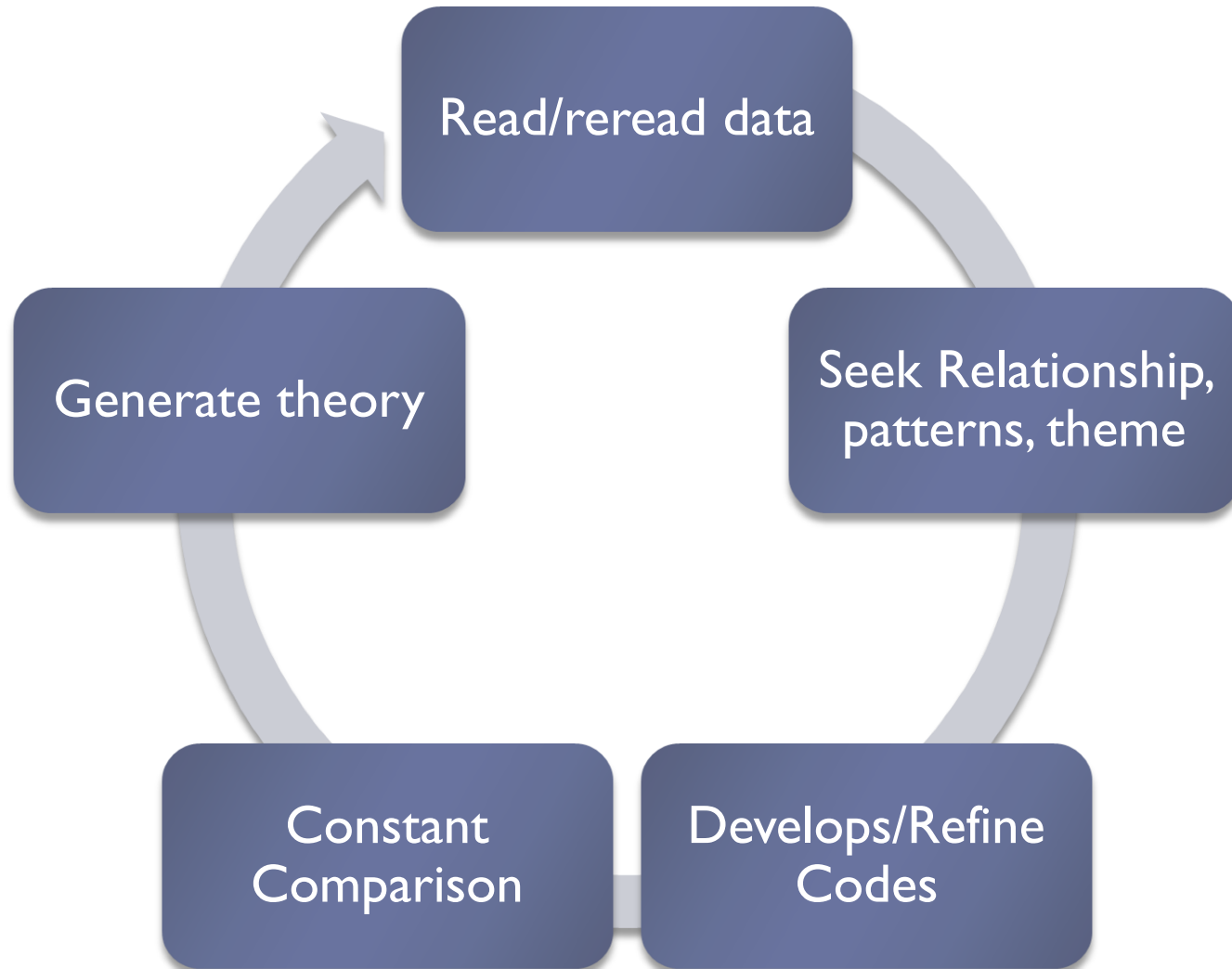
# Semi-structure interview

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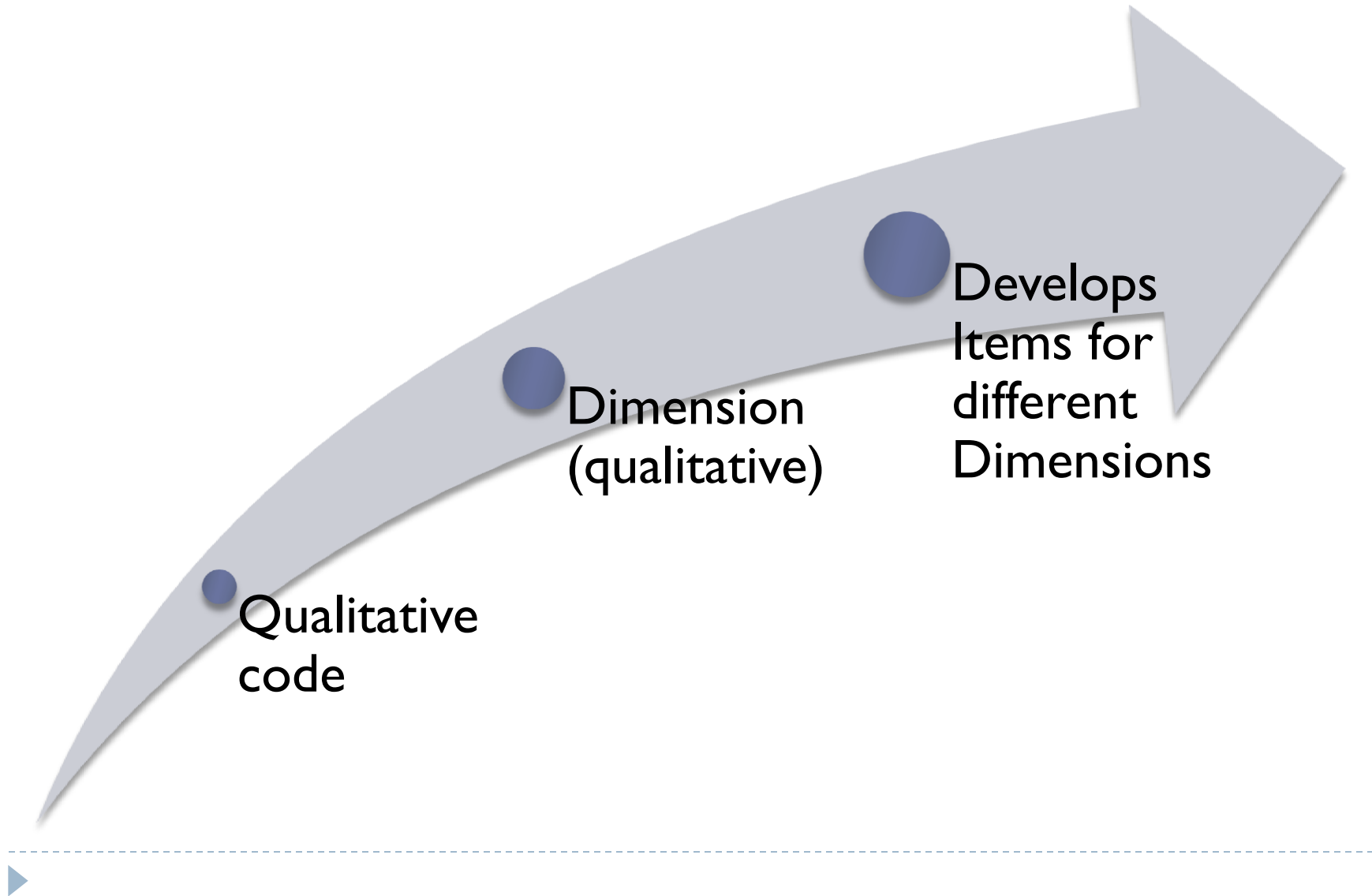
# Analysis of Transcript (Glaser & Strauss, 1967)

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# Quantifying Qualitative Categories (Chi, 1997)

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## Phase 2 Data collection

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- ▶ Send invitations too all science teachers in Korea, Hong Kong, Taiwan, Mainland of China
- ▶ n=200 in each region
- ▶ Input into SPSS



# Translation of Questionnaire

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Translating English Questionnaire  
by Researchers



Validated by Outside Expert



Retranslating the questionnaire  
back to English



Compare and negotiate

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## Phase 3 Analysis

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- ▶ we will conduct factor analysis for finding factors.
- ▶ Questionnaire can developed by factors of professional identity.



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**Comparison  
by region**

Mainland of  
China

Hong Kong

Korea

Taiwan

**Comparison  
by experience**

Pre-service  
teacher

Beginning  
teacher

In-service  
teacher

**Comparison  
by sex**

female

male

**Comparison  
by major**

Physics

Chemistry

Biology

Earth  
science

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# Expected Outcomes

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- ▶ Different kinds of professional identity among different regions in East-Asian
  - ▶ Informs further study related to teacher's identity in Asia
- ▶ The main factors that affect PI are different
  - ▶ Isolate the most prominent feature in developing PI of teachers
  - ▶ Help educators to understand the development of PI
    - ▶ Better teacher education program
    - ▶ Better science education policy



# Implications

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- ▶ In-job satisfaction is correlates to professional identity.
- ▶ If we understand better the professional identity, we can find out how to promote the identity formation
- ▶ Important in the reform, by knowing what the professional identity of teachers have, teacher educators can better facilitate teachers' reflection on their practice. While these reflection leads to a change of practice, else they will just maintain the status quo.



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**Thank you!**

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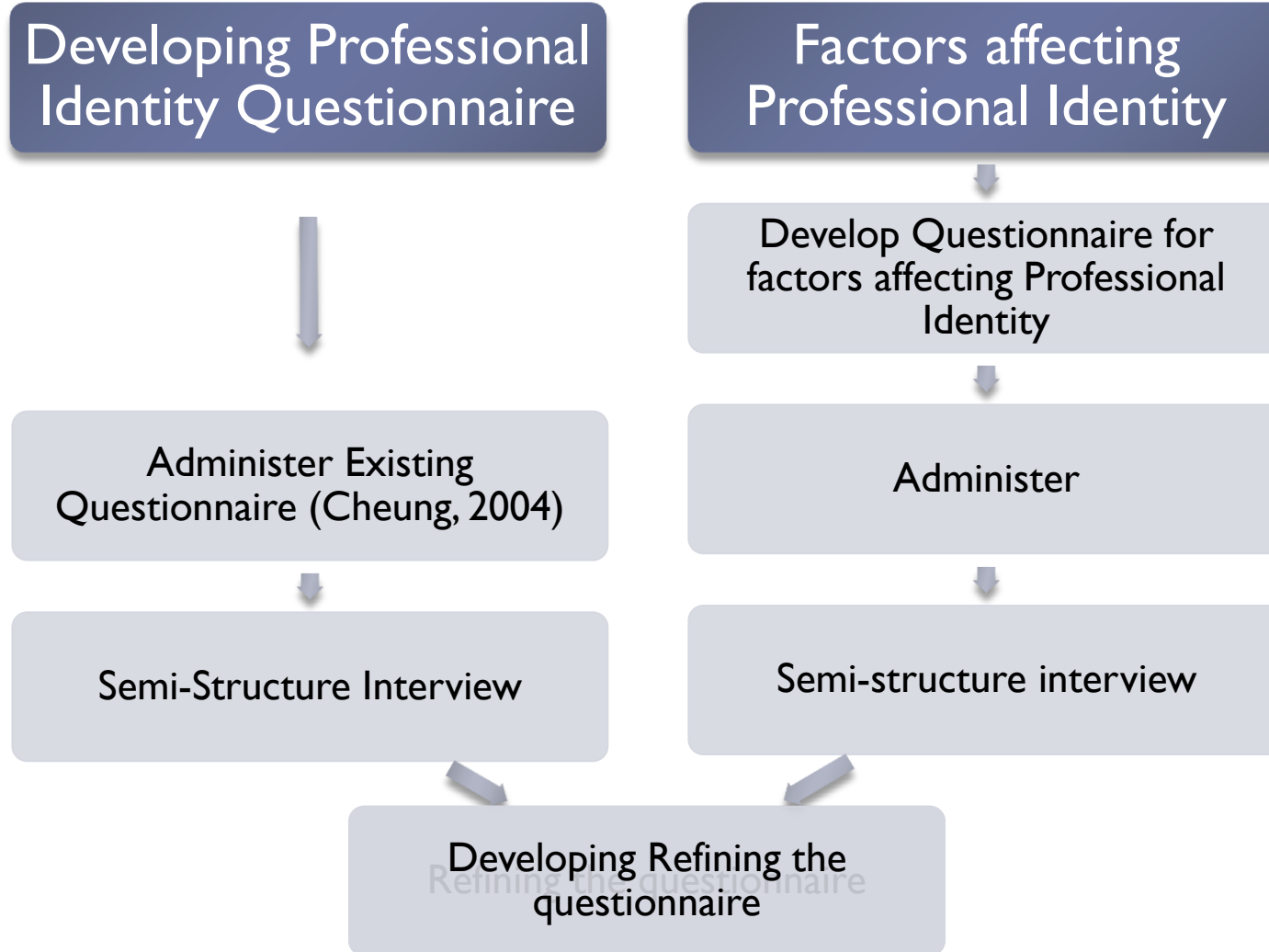
<b>Aspects of professional identity of in-service teachers</b>	<b>Taiwan</b>	<b>Mainland of China</b>	<b>Hong Kong</b>	<b>Korea</b>





# Questionnaire

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*(Beijaard, 1995)*

the meanings  
teacher attach  
to themselves

the meanings  
attributed by others

*(Enyedy et al., 2005)*

teachers'  
professional  
practices  
/actions

teachers' professional  
roles/states

**teachers' concepts or images of self**

**the conceptions and expectations of other people**

*(Van Huizen et al, 2005)*

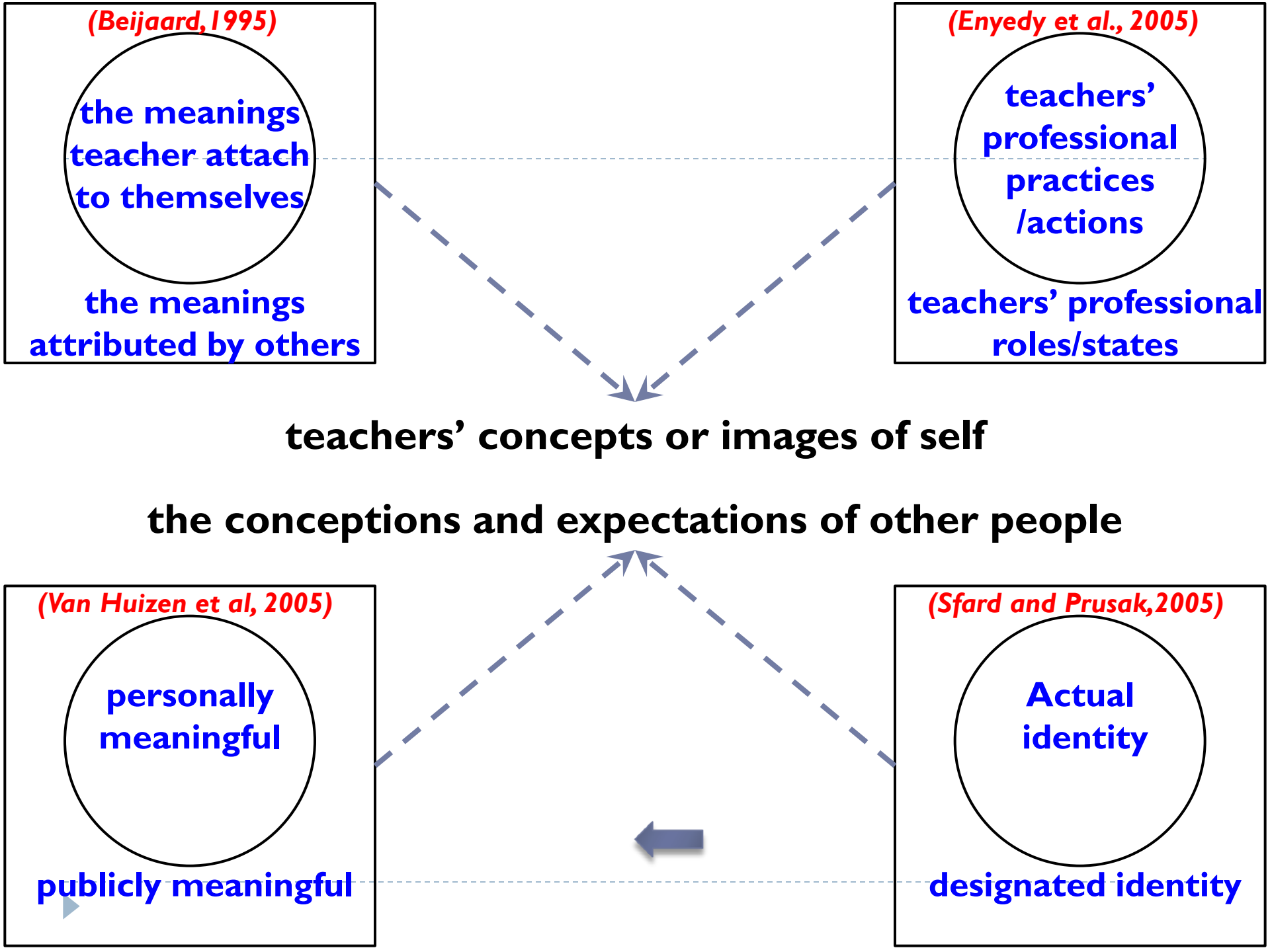
personally  
meaningful

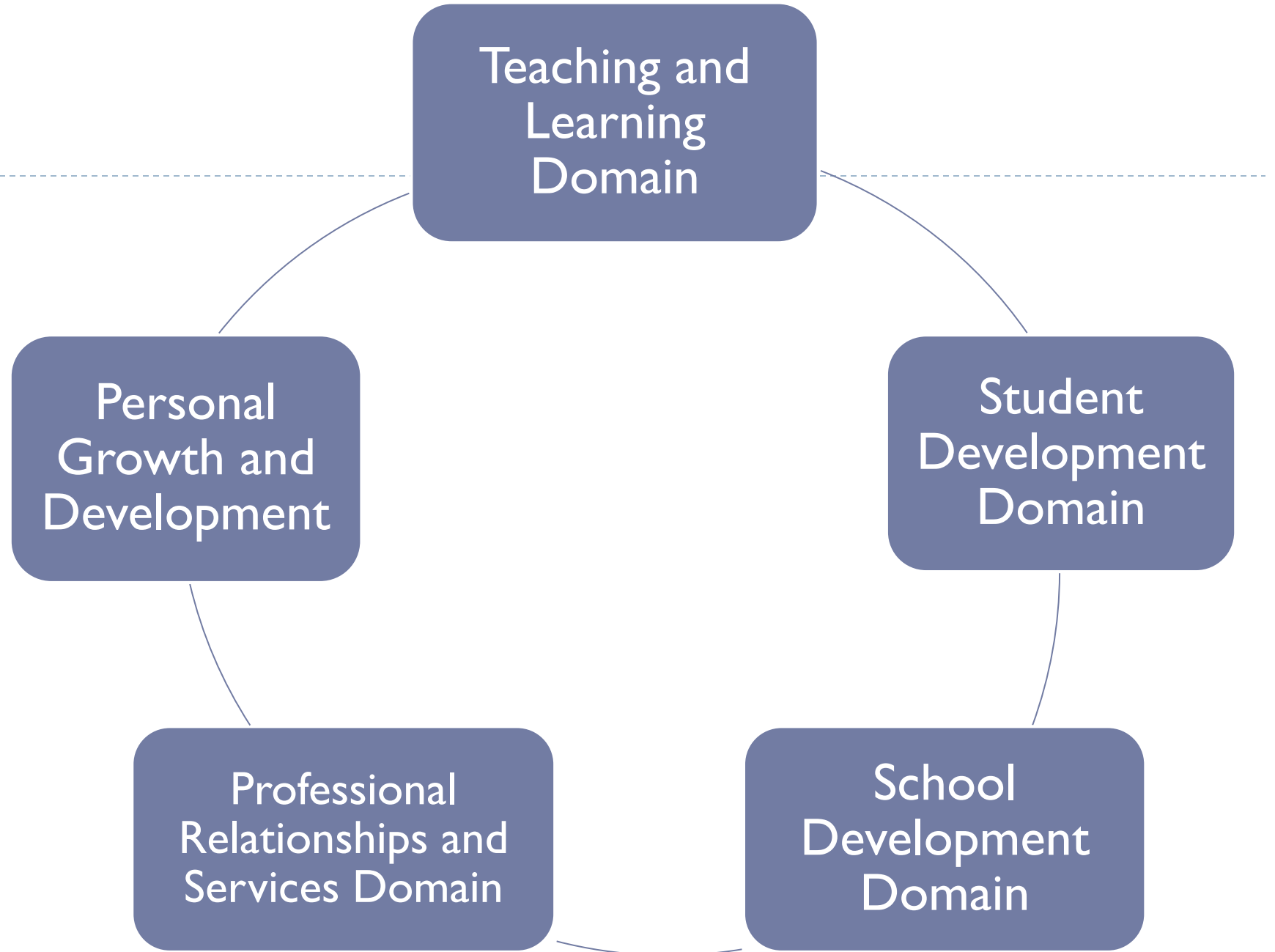
publicly meaningful

*(Sfard and Prusak, 2005)*

Actual  
identity

designated identity





**the five domains of professional practices** (Cheung,2008)

## First

- there should be at least three items in each factor, and each factor should have an acceptable alpha result.

## Second

- both exploratory, factor analysis (varimax rotation and principle component) and confirmatory factor analysis (varimax rotation and maximum likelihood) must produce the same factor analysis structure

## Third

- for the confirmatory factor analysis, the chi-square result must have a significance level of  $p < 0.05$
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- ▶ A five-Likert scale
    - one = 'very weakly'
    - two = 'weakly'
    - three = 'somewhat'
    - four = 'strongly'
    - five = 'very strongly'

- gender,
- years of teaching experience
- highest education level.



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- ▶ **Exploratory factor analysis**, using varimax rotation and principal component, was applied.
  - ▶ **confirmatory factor analysis**, using varimax rotation and maximum likelihood, was applied.

