

# Chemistry Teachers' Professional Noticing in a Collaborative and Dynamic Learning Environment

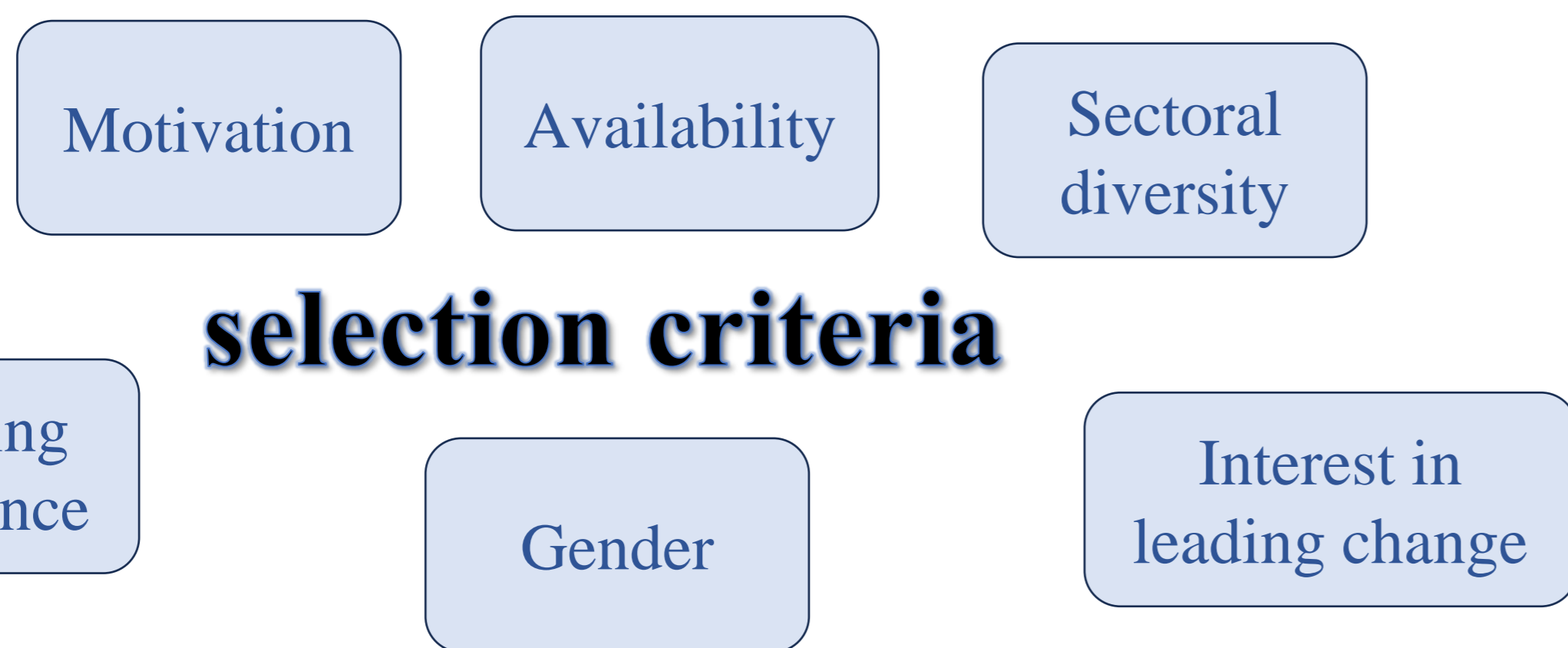
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## Background

The study involved 36 high school chemistry teachers selected by judgment sampling (Rapley, 2014).



## Research Questions

In a collaborative and dynamic learning environment:

(1) What do chemistry teachers notice as important to assess while observing their students?  
(2) What characterizes chemistry teachers' interpretation of their noticing?

(3) What characterizes teachers' knowledge of assessment while they discuss how to act on their noticing and interpreting?

## Research tools

1. Chemistry teachers' observation

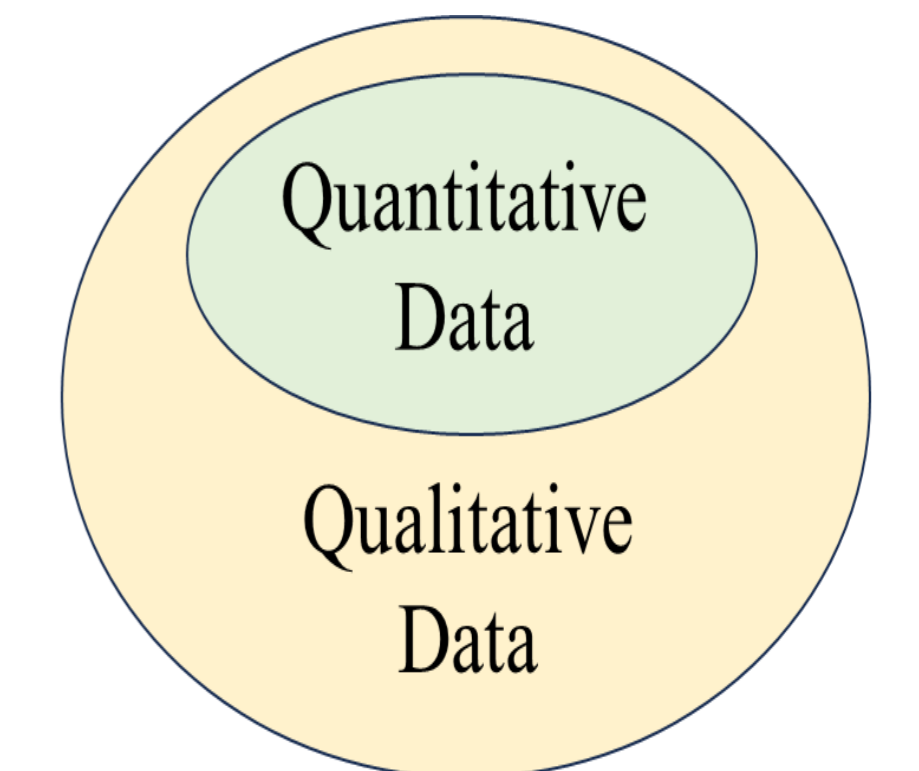
## Research tools

2. Teacher's final assignment  
3. Interview  
4. Experience questionnaire

## Analysis Methods

Qualitative data analysis with **directed content analysis** (Schreier, 2014).

Quantitative analysis - **Factor analysis, Cronbach's alpha.**



Mixed Methods - Concurrent Nested Design

Tell us what you think! Scan the QR code



## Ensuring content validity and Reliability :

- ❖ Inter – rater agreement.
- ❖ Triangulation – Four research tools were used.
- ❖ Considering factor analysis and Cronbach's alpha.

**Ethical Considerations** – The study was approved by the Technion Behavioral Sciences Research Ethics Committee, 2019-015, and the Ministry of Education approval number 11864.

## Experience questionnaire

- Two experts examine the questionnaire to see whether it describes and identifies participants' skills and knowledge.
- Assessing the questionnaire's clarity and readability with chemistry education experts (Avargil, 2022).
- Analysis the statements in the experience questionnaire and calculating Alpha Cronbach's.

## Unit of analysis-

The full description of an event teachers noticed (description, thoughts and reasoning).

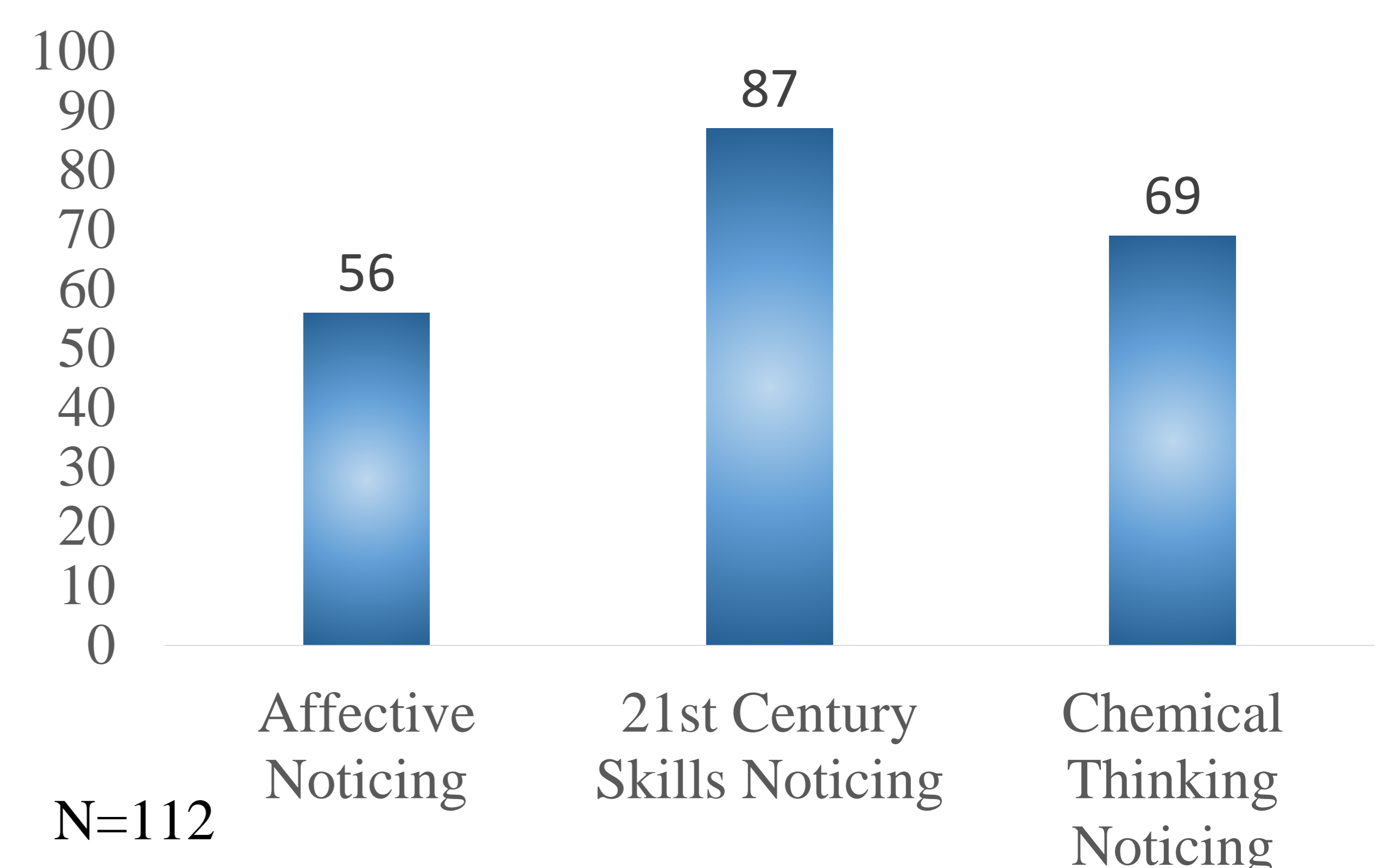
## Teachers' observation during PD

- Independent coding
- The research team met together to review and resolve any discrepancies in codes
- Forming a codebook with definitions and examples
- The process was repeated until saturation were achieved

Data Themes Codes

## Result

RQ1- Chemistry teachers were engaged in identifying learning situations related to understanding students' thinking according to three dimensions:



## RQ2 - The interpretations teachers' chemical thinking noticing dimension

### 21st Century skills noticing

Examples:

- Teamwork and cooperation
- Problem solving strategy

### Chemical thinking noticing

Examples:

- Identifies common misconceptions
- Identifying topics in the curriculum that the student is using successfully or incorrectly

### Affective noticing

Examples:

- Support and help group members
- Being attentive and respectful towards others

## Discussion

**Our study shows that the collaborative and dynamic learning environment:**

- Helped teachers to pay attention to student thinking, collaboration and teamwork skills.
- Provided opportunities to advance teachers' knowledge of assessment for learning through professional noticing.

## References

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