

Title: An Empirical Study on the Influence of Teachers Pedagogical Content Knowledge on Classroom Practice

Author: Michael Davies Rani and Prof. S.M Sungoh

Institution: North-Eastern Hill University, Shillong

Running Head: PEDAGOGICAL CONTENT KNOWLEDGE AND CLASSROOM PRACTICES

Abstract

Teaching is not just about knowing a subject; it also requires the skill to explain it in a way that students understand. This study looks at how teachers' knowledge of teaching methods, called Pedagogical Content Knowledge (PCK), affects their classroom practices. The research focused on English secondary school teachers in Meghalaya, comparing male and female teachers, as well as those from urban and rural areas. A survey was conducted using specially designed questionnaires, and the data was analyzed statistically. The results showed that male teachers had slightly better PCK and classroom practices than female teachers. Also, urban teachers performed better than rural teachers, likely because they have better access to training and resources. The study found a positive link between PCK and effective teaching, meaning teachers with stronger PCK tend to be better in the classroom. These findings suggest that teacher training programs should focus more on improving PCK, especially for teachers in rural areas. Policymakers should provide more opportunities for training, mentorship, and better facilities to help teachers improve. Future studies should look at how PCK develops over time and how technology can be used to enhance teaching skills.

Keywords: Pedagogical Content Knowledge (PCK), teaching effectiveness, student engagement, professional development, classroom practices.

Introduction

Teaching is a complex profession that requires not only mastery of subject matter but also the ability to convey knowledge effectively to students. The concept

of Pedagogical Content Knowledge (PCK) was introduced by Shulman (1986) to describe the unique blend of content expertise and pedagogy that enables teachers to facilitate meaningful learning experiences. PCK encompasses an understanding of how students learn specific subject matter, common misconceptions, and the most effective instructional strategies to address them.

Pedagogical Content Knowledge (PCK) is a fundamental component of effective teaching, bridging the gap between subject matter expertise and instructional methods. Shulman (1986) introduced PCK as the specialized knowledge that enables teachers to transform content knowledge into teachable formats. This study aims to examine the extent to which teachers' PCK influences their classroom practices and how this, in turn, affects student learning.

This study aims to bridge this gap by exploring the impact of teachers' PCK on classroom practices. It examines how variations in PCK levels affect instructional methods, student engagement, and overall learning experiences. By analyzing the relationship between PCK and teaching effectiveness, this research seeks to contribute to the ongoing discourse on improving teacher education and professional development programs.

Several studies emphasize the significance of PCK in shaping teaching effectiveness (Magnusson, Krajcik, & Borko, 1999; Park & Oliver, 2008). Research suggests that teachers with well-developed PCK employ diverse instructional strategies, cater to different learning styles, and create engaging learning environments. However, gaps remain in understanding the direct relationship between PCK and classroom implementation, necessitating further empirical exploration.

Recent research has refined the concept of PCK by incorporating dynamic elements such as pedagogical reasoning and real-time decision-making (Kind & Chan, 2019). The Refined Consensus Model (RCM) of PCK emphasizes that PCK is not static but evolves through cycles of planning, teaching, and reflection. Studies support the idea that well-developed PCK enables teachers to diagnose student misconceptions, adapt instructional methods, and use assessments effectively (Cochran et al., 1993; Hashweh, 2005).

A constructivist perspective on PCK highlights its continuous development through reflection and adaptation. Research by Hashweh (2005) suggests that PCK is shaped by teachers' beliefs, experiences, and interactions with students. Additionally, emerging frameworks such as Technological Pedagogical Content Knowledge (TPACK) integrate digital tools into PCK development, acknowledging the impact of technology on modern teaching practices (Angeli & Valanides, 2013), reported teacher reflections, making it difficult to establish standardized metrics. Mixed-method approaches combining classroom observations, student assessments, and teacher interviews are recommended to gain a more comprehensive understanding of PCK's role in education. Widespread agreement on the importance of PCK, challenges persist in measuring its impact on classroom practices. Many studies rely on qualitative case studies and self-rep teacher reflections, making it difficult to establish standardized metrics. Mixed-method approaches combining classroom observations, student assessments, and teacher interviews are recommended to gain a more comprehensive understanding of PCK's role in education.

Objectives of the Study

1. To find out the difference in Pedagogical Content Knowledge and Classroom Practices of Male and Female Secondary School Teachers.
2. To find out the difference in Pedagogical Content Knowledge and Classroom Practices of Urban and Rural Secondary School Teachers.
3. To examine the relationship between Pedagogical Content Knowledge and Classroom Practices.

Hypothesis of the Study

The null hypotheses are stated as follows:

H₀1. There is no significant mean difference in PCK between Male and Female Secondary School Teachers.

H₀2. There is no significant mean difference in PCK between Urban and Rural Secondary School Teachers.

H₀3. There is no significant mean difference in Classroom Practices between Male and Female Secondary School Teachers.

H₀4. There is no significant mean difference in Classroom Practices between Urban and Rural Secondary School Teachers.

H₀5. There is no significant relationship between PCK and Classroom Practices of Secondary School Teachers.

Methods and Procedure

For the present study the investigator adopted the Descriptive Method. This method is designed to obtain pertinent and precise information concerning the current status of phenomena and whenever possible, to draw valid general conclusions from the facts discovered. They are restricted not only to fact finding but may often result in the formulation of important principles of knowledge and solution of significant problems concerning local, state, national and international issues.

The term descriptive research then, refers to research questions, design of the research and data analysis that would be conducted on that topic. It is called an observational research method because none of the variables that are part of the research study are influenced in any capacity. It is primarily concerned with the present, although it often considers past events and influences as they relate to current conditions. Therefore, the Descriptive Method was used in this research to meet and achieve the objectives stated.

Sample

The sample for the study includes 300 secondary school teachers both male and female, Urban and Rural teaching English in the East Khasi Hills District of Meghalaya

Tools used

- a. **Pedagogical Content Knowledge (PCK):** The tool for studying PCK was developed and standardized by the research scholar.
- b. **Questionnaire on Classroom Practices:** The tool for studying Classroom Practices was developed by the research scholar.

Results

Objective 1: To find out the difference in English Pedagogical Content Knowledge and Classroom Practices of Male and Female Secondary School Teachers.

Table No.1: Showing the difference between male and female teachers in PCK

Category	N	Mean	SD	df	Calculated t	Table t	Level of significance
Male	119	147.71	15.06	298	3.18	1.96	S
Female	181	142.07	15.01				

Table No. 2: Showing the difference between male and female teachers in Classroom Practices

Category	N	Mean	SD	df	Calculated t	Table t	Level of significance
Male	119	155.76	11.12	298	2.66	1.96	S
Female	181	151.85	13.20				

Objective 2: To find out the difference in Pedagogical Content Knowledge and Classroom Practices of Urban and Rural English Secondary School Teachers.

Table No. 3: Showing the difference between Urban and Rural teachers in PCK

Category	N	Mean	SD	df	Calculated t	Table t	Level of significance
Urban	128	154.78	11.81	298	2.89	1.96	S
Rural	172	150.43	13.61				

Table No. 4: Showing the difference between Urban and Rural teachers in Classroom Practices

Category	N	Mean	SD	df	Calculated t	Table t	Level of significance
Urban	128	148.53	15.05	298	4.25	1.96	S
Rural	172	141.16	14.67				

Objective 3: To examine the relationship between Pedagogical Content Knowledge and Classroom Practices.

Table No. 5: Showing the relationship between PCK and Classroom Practices

Variables	Computed value of 'r'	df	Value of 'r'	Significance Level
PCK	0.20	298	0.11	S
CP				

Major Findings

In the present study the investigator found that there is a significant difference between male and female secondary teachers in their PCK, it showed that the significant mean difference of 3.18 is in favour of male teachers' which indicates that male teachers have a slightly high Pedagogical Content Knowledge compared to their female counter-part.

The present finding is in line with the findings of Taqi. H et.al (2015) which found out that most students prefer male teachers as they believe that the positive personal traits of the male teachers far exceed those of the female teachers. Nonetheless, the statistics have revealed that both genders (and sometimes female more than male teachers) are good language teachers. Hence, reflecting the main finding: gender is not a criterion for good language teaching, but it is our students' criterion for choosing a language teacher.

On the other hand, in terms of Classroom Practices the difference of mean scores between male (155.76) and female (151.85) teachers' is statistically significant, with df 298, the 't' value being 2.66 is significant at 0.05 level. This indicates that male teachers slightly outperform their female counterparts

A possible explanation for this difference could be attributed to various social and institutional expectations, which might influence the teaching approaches and perceived responsibilities of male and female teachers. Male teachers may experience a different level of professional autonomy or support, potentially affecting their confidence and classroom practices. Conversely, female teachers often face

additional responsibilities and societal expectations that may impact their focus on instructional approaches and cognitive engagement.

Major Findings

The significant mean difference of 7.37 is in favour of Urban English Secondary School teachers which indicates that Urban English Secondary School teachers have a slightly high Pedagogical Content Knowledge compared to the rural English Secondary School Teachers.

This difference may stem from several factors. Urban teachers often have greater access to professional development programs, diverse teaching resources, and advanced technologies that enrich their teaching methods.

In contrast, rural teachers may face challenges such as limited access to these resources and fewer opportunities for professional growth, which could impact their cognition levels in teaching practices.

The analysis also indicates a statistical difference in the mean scores of classroom practices between urban and rural teachers; however, the calculated t -value of 2.89 is significant at the 0.05 level. This suggests that while there may be some differences in classroom practices, they are not statistically meaningful enough to draw strong conclusions. Endriyati et al. (2019) identify various challenges faced by teachers in rural versus urban schools, particularly in the context of teaching English. These challenges encompass student-related factors such as vocabulary mastery, motivation, parental support, and classroom engagement.

They also highlight teacher-related issues, including familiarity with information technology, mastery of effective teaching methods, and access to professional training. Furthermore, infrastructural limitations, such as inadequate facilities, lack of appropriate classrooms, and insufficient technological resources (e.g., computers and projectors), are more pronounced in rural schools.

Major Findings

The results in Table No.5 indicates a positive correlation ($r = 0.11$) between PCK and Classroom practices. Statistical testing reveals a significant relationship, demonstrating that Pedagogical Content Knowledge positively influences the Classroom Practices of the sampled teachers in this study.

This study aligns with the findings of Park and Oliver (2008), which discusses the strong connection between Pedagogical Content Knowledge (PCK) and teaching effectiveness. Their research emphasizes that teachers with well-developed PCK demonstrate better instructional strategies, classroom engagement, and student learning outcomes. Similarly, Shulman (1986) initially introduced the concept of PCK, stating that teachers must integrate subject knowledge with pedagogy to enhance their teaching effectiveness. Additionally, Kind and Chan (2019) further explored how PCK influences classroom practices, highlighting its dynamic nature and impact on student learning.

Conclusion

This study concluded that teachers' knowledge of how to teach (PCK) plays an important role in their classroom performance. The findings suggest that male teachers and teachers in urban areas have slightly better PCK and classroom practices than female teachers and those in rural areas. The study also found a positive link between PCK and classroom effectiveness, meaning that teachers with stronger PCK are better at engaging students and delivering lessons.

Applications of the Study

The results of this study can help improve teacher training programs. Schools and education departments can focus on improving PCK through workshops, mentorship, and better training, especially for teachers in rural areas. Policymakers can also work on providing more resources and learning opportunities to help all teachers improve their skills.

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