



# Increasing High School Teachers' Proficiency in Effective Questioning Techniques through Targeted Professional Development

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## ABSTRACT

The research study examines the impact of targeted professional development training on the use of effective questioning strategies of high school teachers. The target was to improve the frequency of use of teachers' perceptions, abilities and effective questioning techniques. Research questions addressed the impact of professional development on the frequency of effective questioning strategy use and the notion of teachers' professional development. The study consisted of seven high school teachers from various countries. The results of the study indicated that professional development may significantly increase the use of effective questioning techniques of teachers. The study used a mixed-method approach, including questionnaires, interviews and class observations to examine the effects of intervention. The teachers demonstrated a significant increase in their perceptions of their inquiry skills after professional development. They reported more awareness about effective inquiry strategies, improving their ability to use these strategies, and positive impact on the atmosphere of the classroom.

**Keywords:** Effective inquiry, teacher professional development, class rigor, high-order thinking, questioning techniques, classroom management, students' engagement.

## 1. Introduction

There is an increase in demand for graduates ready for college and career, which require more rigors in classes (Blackburn, 2015). High-level questioning is necessary to create a rigorous learning environment. Teachers need to develop demanding learning opportunities to prepare learners for college and career (Paul and Elder, 2000).

The research study checks whether the targeted professional development improves the frequency of high school teachers' understanding, ability and the frequency of use of effective questioning strategies. Despite the importance of inquiry, teachers often lack knowledge and skills, which encourages high-order thinking (Mougo-Tech, 2006). Teachers need professional development to support effective questioning in the classroom environment.

### 1.1. Statement of the Problem

Students require teachers' effectiveness and more rigorous teaching to ensure they graduate college and career-ready (Marzano, 2014). Teachers often lack training in effective questioning strategies. This study examines the impact of targeted professional development on teachers who use these strategies.

### 1.2. Rationale

Critical thinking is necessary in today's world. Effective questioning helps students gather process and implement information.

### 1.3. Prior Interventions

Many teachers often do not use effective questioning to encourage students learning (Sachdeva, 1996). Effective questionings challenge students to think seriously, while poor questions are often tedious and limited (Danielson, 2007; TOFED, Elsner, and Hans, 2013).

### 1.4. Research Questions

This study addresses the following research questions:

1. What will be the effect of professional development for high school teachers, on which effective questioning strategies are used in high school classes for six weeks?
2. What is the perception of high school teachers about professional development on effective inquiry strategies?

### ***1.5. Significance of the Study***

The purpose of this study is to transform the learning environment for students into a more involving classroom. The participating teachers will get better understanding of effective questioning techniques, which will increase students learning and engagement, and will reduce the concerns of class management (Coliere, 2021).

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## **2. Literature Review**

Effective teachers use various teaching strategy and conversation styles (Doyle, 1985). The major factors of student learning include the ability of the teachers to structure teaching materials, high-order questionings, using student ideas, and examining the students' comments (darling-hymond, wise, and pizo, 1983; Good and Brophy, 1986; 1986; Rosenshine & First, 1973). Teachers should guide students through the thought process (Caulfield-Sloan & Ruzicka, 2005). Effective professional development is important to equip teachers to acquire the specific skills such as high-order questioning to improve the student's performance (Caulfield-Sloan & Ruzicka, 2005).

### ***2.1. Questions from Teachers***

Teachers ask two types of questions: Display Questions and referential questions (Long & Sato, 1983). Display questions, test the students' knowledge to known what information they have, while referential questions encourage the exchange of real communication and knowledge.

### ***2.2. Teachers' Questioning Techniques***

Teachers use the strategies of questionings to achieve specific teaching goals, including motivating classroom interactions, obtaining high quality responses from learners, creating a vibrant student-centric classroom environment and promoting the communication ability of learners (Wangru, 2016). The strategy of questioning involves prompting, probing, repeating and redirecting.

- **Prompting:** Teachers provide hints to help learners answer questions (Kerry, 1982; Perrott, 1982).
- **Probing:** Educators ask a series of questions to stimulate a more complete response (Hunkins, 1995).
- **Repetition:** Teachers reiterate questions to ensure all students are listening and to give them more time to think (Wangru, 2016).
- **Redirecting:** Instructors ask the same question to multiple students to inspire communication (Perrott, 1982).

### ***2.3. Summary***

Teacher professional development directly affects instructional techniques, which in turn affects the student's performance. Students' performance ability is dependent on teachers who are asking open-ended questions that require the use of critical thinking skills (Piagate, 1972; Bloom, 1956). High-quality professional development is required for using high-order questioning strategy (Wangru, 2016).

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## **3. Methodology**

### ***3.1. Purpose of the Study***

The study seeks to investigate if providing targeted professional development to high school teachers on using effective questioning strategies, will improve their perceptions of understanding, ability to use, and frequency of using these techniques.

### ***3.2. Study Population***

The population included seven teachers (two men and five women) from various countries of Africa, Asia and the Middle East. The average employees were 38 years old. The nationality of the students included Arabian speaking, Christians and Muslims of Jordan, Egypt, Sudan, Syria, Philippines and India. Most of the students were 18 years old. The school promoted diversity. The teaching format was hybrid, emphasizing high school teachers and students.

### ***3.3. Population Justification***

High school teachers were chosen because the research focused on their questioning skills.

### 3.4. Intervention

All Selected teachers developed effective questioning skills professionally with access to internet and laptops. Data were collected before and during their interaction with professional development training with the students.

### 3.5. Intervention Plan

The intervention plan includes:

- Week One: Overview of inquiry skills of teachers.
- Week two: Professional development training on effective questioning.
- Week three to six: Teachers apply effective questioning skills in their classes while data is collected.

### 3.6. Sources of Data

The study used qualitative and quantitative methods to examine the effects of professional development. Data sources include:

- Teacher questionnaire
- Semi-structured interview
- Class observation

### 3.7. Instrumentation

Three instruments were used in this study:

- **Effective questioning strategies Questionnaire (EQSQ):** This 20-item Questionnaire assessed the perceptions of teachers' questioning skills. It used a 4-point Likert scale (1 = lowest, 4 = highest). The questionnaire was adapted from an existing research.
- **Semi-structured interview:** Interview was structured to explore teachers' experiences in effective questioning and professional development.
- **Classroom Observation Checklist (COC):** This tool adapted from previous research was used to explore the frequency and type of questioning used by teachers.

### 3.8. Data Analysis

Quantitative data from EQSQ was analyzed by using descriptive figures (mean, standard deviations) and T-tests to compare pre-and-post intervention scores. Qualitative data from the interview was analyzed using thematic analysis.

## 4. Data Analysis and Results

The results of the data analysis are presented in this section.

### 4.1 Quantitative Results

Table 1 shows the results of the Effective Questioning Strategies Questionnaire (EQSQ). The table provides the mean pre- and post-intervention scores, the standard deviations, and the t-test outcomes.

**Table 1:** *Effective Questioning Strategies Questionnaire Results*

	<b>Pre-Intervention (SD)</b>	<b>Mean</b>	<b>Post-Intervention (SD)</b>	<b>Mean</b>	<b>t-value</b>	<b>p-value</b>
EQSQ	2.64	(0.41)	3.57	(0.38)	-6.78	<0.001

The results show a significant increase in teachers' perceptions of their effective questioning expertise following the professional development intervention ( $t(6) = -6.78, p < 0.001$ ).

### 4.2 Qualitative Results

Qualitative data from semi-structured interviews and class observation support quantitative findings. The following themes were revealed by thematic analysis of interviews:

- **Increase in awareness:** Teachers reported more awareness about the importance of effective questioning and using different types of questions.
- **Improved skills:** Teachers felt more confident in their ability to prepare and ask effective questions. They reported using a wide range of questioning skills, including probing, prompting and redirecting.
- **Positive effects on class environment:** Teachers saw that the use of effective questioning has increased the participation, and critical thinking of the student.

Class observations confirmed these conclusions. The observers referred to a significant increase in the frequency of high-order questions asked by teachers after professional development.

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## 5. Discussion and Conclusion

The results of this research indicate that focused professional development can have the profound impact of improving high school teachers' implementation of effective questioning techniques. The quantitative data demonstrate a statistically significant growth in teachers' perceptions of their questioning abilities, and the qualitative data offer important information on the particular ways that the professional development influenced their instructional practice.

The findings of this research reinforce existing research on teacher questioning and the success of professional development in enhancing pedagogical practice. Furthermore, the findings of this research align with advocates for more demanding and student-centered educational settings that foster critical thinking and problem-solving skills.

The direct beneficiary of this study's findings is the school system. Professional development modules should prioritize the development of teachers' questioning skills. Teachers need to be afforded the chance to learn various questioning techniques, practice their skills through application, and be provided feedback on their competency level.

### 5.1 Limitations of the Study

There are some limitations of study that should be noted. The sample was small, and it reduces the generality of findings to the larger population. The study was also performed in a special setting, and it could reduce the transfer of results in other settings.

### 5.2 Future Research

Future studies can try to disprove these limitations by recruiting a large population and conducting research in diverse settings. It would also be beneficial to check the long-term effects of professional development on the questioning skills and subsequent learning achievements of the students. In addition, researchers can check the use of technology as a promising method to increase the acquisition of question skills.

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