

CHAPTER I INTRODUCTION

1.1 Background

Education serves as the primary foundation for developing quality human resources, a principle underscored by Indonesia's National Education System Law, which emphasizes holistic learning that integrates cognitive, affective, and spiritual dimensions. However, this ideal stands in stark contrast to reality. The PISA 2022 results reveal a critical challenge: Indonesian students' science performance remains low (a score of 383) and has shown a significant decline of 13.2 points over the past five years. This national issue is reflected at the local level; an interview with a chemistry teacher at SMAN 2 Percut Sei Tuan in October 2025 confirmed the inability to meet the Minimum Passing Grade, with an average student score of 63 against a target of 75. This problem is particularly acute in abstract topics like acid-base chemistry and is compounded by an erosion of academic ethics, such as widespread cheating. These conditions indicate that conventional chemistry instruction has been ineffective in fostering deep conceptual understanding and building student character.

In response, an innovative learning approach is urgently needed one that moves beyond rote memorization to instill meaning and values. In this context, Spiritual Quotient (SQ), defined as the capacity to find meaning, value, and purpose in life, is proposed as a foundational element that can drive intrinsic motivation and foster integrity (Zohar & Marshall, 2000). The relevance of SQ in education is strongly supported by a growing body of global research. A comprehensive meta-analysis by Zhou et al. (2024) in the *Educational Psychology Review* established a significant positive correlation between SQ, emotional intelligence (EQ), and academic achievement ($r = 0.36\text{--}0.50$). Further supporting this, Turi et al. (2020) found that the integration of EQ and SQ was a key predictor of academic success among university students in Pakistan. In the Indonesian context, studies by Arifin (2020) and Afrianti & Imamuddin (2022) have affirmed SQ as a significant internal factor and a positive influence on mathematics learning outcomes, respectively. This collective evidence positions SQ not as a peripheral concern, but as a core psychological resource for academic engagement and success.

SQ is seen as the "core of intelligence" that provides moral direction and meaning in life, so that it is able to complement intellectual intelligence (IQ), emotional intelligence (EQ), and even physical intelligence (PQ). Scholars such as Zohar and Marshall in Afrianti & Imamuddin (2022) affirms that IQ, EQ, and PQ will not run perfectly without SQ as the primary foundation, as SQ helps individuals make wise decisions, act ethically, and have a broader life orientation.

From a pedagogical standpoint, integrating spiritual values into science learning has shown demonstrable positive potential. In chemistry specifically, studies by Andini & Darmana (2025) and Harahap & Darmana (2025) provide evidence that teaching materials infused with spiritual values can improve both learning outcomes and religious attitudes. Beyond chemistry, Suryanti (2020) demonstrated that SQ-based group counseling significantly strengthened students' creativity and innovation, skills highly relevant to scientific problem-solving. This study employs the Problem Based Learning (PBL) model, chosen for its proven efficacy in fostering higher-order thinking skills through contextual problem-solving. This approach is particularly suitable for abstract and misconception-prone topics like acid-base chemistry (Sugiarti et al., 2023; Uluçınar, 2024). Research by Sabrina et al. (2024) further confirms that PBL has a strong effect on developing students' creative and reflective thinking skills, making it an ideal vessel for a more holistic educational approach.

Despite this promising groundwork, critical research gaps remain. First, while studies like Andini & Darmana (2025) have explored spiritual integration, few have done so within the structured framework of the PBL model, specifically for complex topics like acid-base equilibrium where student difficulties are well-documented (Djarwo & Kafiar, 2023; Lathwesen & Belova, 2024). Second, and more importantly, research examining how differences in students' pre-existing SQ levels influence their learning outcomes within such an innovative chemistry learning context is still scarce. Most existing studies treat SQ as a general concept rather than a specific moderating variable. Therefore, this study aims to investigate the effect of a spirituality-integrated PBL model on learning outcomes, while specifically analyzing the differences in these outcomes based on students' SQ levels. The novelty of this research lies in this unique trifecta: the synergistic

combination of the PBL model, the deliberate integration of spiritual values, and a detailed analysis of effectiveness based on SQ level differentiation.

Based on this rationale, research entitled **the effect of chemical learning integrated with spiritual values on student learning outcomes reviewed from the spiritual quotient (SQ) level** is crucial to conduct. The findings are expected to provide a theoretical contribution to the development of holistic chemistry education and practical insights for shaping students who are both intellectually competent and possess strong character.

1.2 Problem Identification

Based on the background of the problems that have been raised, it can be identified that the problems relevant to this research are:

1. There are still low, with scores 63 chemistry learning outcomes for students, especially in acid-base materials which are considered abstract and difficult to understand.
2. Students' spiritual quotient (SQ) has not been optimally integrated in learning so that the potential of SQ as the foundation of IQ and EQ has not been fully utilized.
3. The chemistry learning tools used by teachers generally still focus on the cognitive aspect, with less emphasis on the integration of spiritual values.
4. Previous research has highlighted more the influence of SQ on learning outcomes in general subjects (mathematics and religious education), but not much in the context of chemistry.
5. There has been no study that specifically reviews the influence of integrated chemistry learning of spiritual values on chemistry learning outcomes reviewed from the SQ level of students.

1.3 Scope

In order to make the research more directed, the scope of this research is focused on:

1. The main material used in chemistry learning is acid-base material.
2. The chemistry learning process that is carried out is learning that is integrated with spiritual values.

3. This study examines the effect chemistry learning integrated with spiritual value (independent variable) on student learning outcomes in the cognitive domain (dependent variable).
4. This study also involves students' Spiritual Quotient (SQ) as a moderator variable that influences the relationship between the independent and dependent variables.

1.4 Problem Limitations

To avoid expanding the discussion, this study was limited to:

1. The subjects of this study were high school students who were studying acid-base material.
2. The measurement of learning outcomes was limited to the cognitive domain in accordance with the competency achievement indicators in the applicable curriculum.
3. The spiritual values integrated into the learning tools (teaching modules) were sourced from universal spiritual values and were not tied to any particular religion.
4. Students' Spiritual Quotient (SQ) levels are categorized based on a validated SQ questionnaire instrument.

1.5 Problem Formulation

Based on the background and scope of the problem that has been found previously, the formulation of the problem in this study is:

1. Is there an effect of chemistry learning integrated with spiritual values on learning outcomes?
2. Is there an effect of SQ on learning outcomes?
3. Is there an interaction between chemistry learning integrated with spiritual values and SQ on learning outcomes?

1.6 Research Objectives

In line with the formulation of the problem that has been stated above, this research has the following objectives:

1. Knowing the effect of chemistry learning integrated with spiritual values on learning outcomes.
2. Knowing the effect of SQ on learning outcomes.

3. Knowing the interaction between chemistry learning integrated with spiritual values and SQ on learning outcomes.

1.7 Research Benefits

This research was carried out with the hope that it can provide the following benefits:

1. For Students: To help students improve chemistry learning outcomes and foster awareness and spiritual character in the learning process.
2. For Teachers: Be a reference in implementing chemistry learning that integrates spiritual values to increase student involvement.
3. For Schools: Contributing to strengthening character education through the application of spiritual values in science learning.
4. For Other Researchers: To be a reference for further research related to the integration of spiritual values in the learning of chemistry or other scientific fields.