Leveraging Science Teachers' Experiences Toward Continuous Career Improvement

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Abstract

This study explored the experiences of Junior High School Science Teachers toward continues career improvement focusing on the Individual Performance Commitment Review Form domains which is essential for the advancement of science education and aims to contribute valuable insights into the dynamic of teacher quality and faculty enhancement. The participants of the study were the 12 Junior High School Science Teachers who are considered novice in teaching within the Congressional District I of Nueva Ecija. This also made use of purposive sampling in selecting the 12 respondents of the study. Qualitative research design in a form of case study was employed and gathered the data through an in-depth interview, provided interview guide questionnaire and thematic analysis was used to analyze the data. The findings of the study shed light on teachers' perspectives, practices, and challenges, which provide valuable insight into the current state of science education and the efforts made by the teachers to enhance their teaching practices. It indicates that JHS science teachers are committed to continuous improvement in science teaching, creating an inclusive learning environment, alignment and updating of curriculum, and used of comprehensive assessment strategies to improve student learning outcomes. The study concludes that JHS science teachers are dedicated professionals with diverse backgrounds and experiences exhibiting strong commitment to improvement that highlights the necessity of continuous professional development and the need to support for teachers' journey towards continuous improvement. School and educational institution is recommended to have regular and pertinent professional development tailored to JHS science teachers, establish mentorship program and peer collaboration, and further research on the role of technology in enhancing teaching practices.

Keywords: Science Teachers; Continuous Career Improvement; Teacher Quality; Professional Development; Teachers' Experiences; Faculty Enhancement

1. Introduction

Science education plays a vital role in shaping the intellectual and practical skills of students, serving as a cornerstone for technological advancement and societal progress (Bybee, 2014). Within the domain of science education, the teacher plays a great part in the teaching and learning process. Recognizing the importance of science teacher, there has been growing emphasis on the needs for development on a regular basis to improve the teacher's performance through continuous studies in accordance with the needs of the development of quality education (Rahman, 2014).

The demand for highly qualified and proficient educators, specifically in science, during the 21st century has intensified. Jan (2017) stated that great students are the result of great teachers. This becomes one of the most important factors in students' achievement, so it is significantly true to take a closer look on how to support the development of teacher's quality especially the beginner. However, hiring certified teachers to teach major subjects such as science is a short-term solution and may not be equipped to teach such crucial

subjects (Laguatan, 2020). In the book of Taylor (2016) about teacher quality in upper secondary science education, states that quality rather than quantity is what matters and teacher quality is a major determinant.

Educational institutions on the other hand, strategically initiated faculty enhancement programs, including workshops, seminars, integration of technology in teaching, to mentorship programs are given to cultivate and nurture the professional growth of educators (Darling-Hammond, Hyler, & Gardner, 2017). This program aims to empower educators with the necessary tools and knowledge to adapt to the evolving educational landscape as well as continuously enhance their instructional capabilities.

In this generation, rapid technological advancement and global challenges put weight on educators to become highly proficient and for continuous professional development. According to the study of Xhaferi (2017), it has emphasized that teaching quality plays an important and powerful agent in improving learning and in the achievement of learners. Thus, the school is important to develop teachers' quality by constructing a term which assists teachers in continuous improvement. Teachers' qualification points that the attributes, professional knowledge and professional practices of teachers hold are very important in the teaching and learning process (Laguatan, 2020). In response to these changes in the educational landscape of the Philippines, teachers are assessed through the new framework known as Philippines Professional Standards for Teachers (PPST) which becomes the guiding principle in determining the level of proficiency of teachers within the given standards of the framework.

As a beginning science teacher, continuous professional development is essential to further enhance skills and knowledge throughout the career in science education. This study's justification lies in the importance of aligning teaching practices with established standards to ensure quality education (Darling-Hammond, et al., 2017). By focusing on the IPCRF domains, this research aims to enhance the effectiveness of science teaching practices, thereby improving student learning outcomes. Additionally, understanding the experiences of science teachers in relation to these domains can inform policy decisions and professional development initiatives, ultimately benefiting the entire education sector. Furthermore, the exploration of this study is essential for the advancement of science education and aims to contribute a valuable insight into the dynamics of teacher quality and faculty enhancement program.

1.1. Research Questions

The study determined the experiences of Science Teachers in performing the set of standards geared towards their continuous career improvement. Specifically, the study answered the following questions: What are the Science Teachers experiences toward continuous career improvement in considering the following: Content Knowledge and Pedagogy; Learning Environment and Diversity of Learners; Curriculum and Planning; Assessment and Reporting; and Personal Growth and Professional Development and its implications toward continuous career improvement of JHS science teachers?

2. Review of Related Literature

Science Teacher Quality

Science education in the Philippines is a vital component of the national curriculum, aimed at developing students' scientific literacy and critical thinking skills (DepEd, 2013). Science teachers play a crucial role in achieving these goals, as they are responsible for delivering quality science education to students. Despite the importance of science education, several challenges affect the quality of science teachers in the Philippines. One significant challenge is the lack of qualified science teachers, especially in upskilling and being prepared in fast transition of educational landscape in terms of technology advancement (Pelgone et al., 2022). This shortage often results in overworked teachers, large class sizes, and limited resources, which can negatively impact the quality of science education (DepEd, 2017). To address these challenges, the

Department of Education (DepEd) has implemented various programs to enhance the professional development of science teachers. These programs include training workshops, seminars, and conferences designed to improve teaching strategies and content knowledge (DepEd, 2018). However, the effectiveness of these programs in improving science teacher quality is still a subject of debate as for many of the teachers' regarded seminars and workshops are of little to no benefit to them (Padillo et al., 2021). Research suggests that teacher quality has a significant impact on student learning outcomes in science (Darling-Hammond, et al., 2017). Study of Padillo et al., (2021) states that teachers are accountable in students' performance and achievement, thus it depends on the quality.

The quality of science teachers plays a pivotal role in the educational landscape which fosters a scientifically literate individual. Teachers are tasked with instilling not only a comprehensive understanding of scientific principles but also a passion towards science and technology. Saying so, a high-quality science teacher is subject experts, explores pedagogical skills, and with innate enthusiasm to inspire and cultivate the next generation of scientific thinkers. Enhancement of professional and pedagogical competence through affording teachers' opportunities to enhance their knowledge and skills in crafting materials and employing diverse learning methods during the instructional process. This approach allows teachers the chance to take initiative and demonstrate creativity in their efforts to cultivate knowledge (Rahman, 2014). In the 21st century, teachers' competencies incorporate their grasp of subject matter, teaching skills, various abilities, and attitudes. These competencies involve combination of two or more which significantly influence the comprehension of learning outcomes. A teacher's recognition is based on proficiency in subject matter, teaching capabilities and the effectiveness in conveying ideas to students (Abid, et.al, 2017).

Continuous Improvement

Continuous improvement in education is a process that are essential for organization that enhances effectiveness and adapt to changes in a rapidly changing environment which aims to enhance teaching and learning practices, leading to better student outcomes (Martinez & Yap, 2017). In the Philippines, the Department of Education (DepEd) has been implementing various initiatives to promote continuous improvement in schools. One of the key initiatives for continuous improvement in Philippine education is the K to 12 curriculum reform. Implemented in 2013, the K to 12 curriculum aims to provide a more holistic and learner-centered approach to education (DepEd, 2013). The curriculum emphasizes the development of 21st-century skills, such as critical thinking, creativity, and collaboration, to better prepare students for the challenges of the modern world.

Continuous improvement in education also involves enhancing the professional development of teachers. DepEd has been conducting training programs, workshops, and seminars to improve the pedagogical skills and content knowledge of teachers (DepEd, 2018). By investing in teacher development, DepEd aims to improve teaching quality and ultimately student outcomes. While the Philippines has made significant strides in promoting continuous improvement in education, challenges remain. These include limited resources, inadequate infrastructure, and inadequate or misguided professional development (Sinsay-Villanueva & Orbeta, 2023). Moving forward, it is essential for DepEd to address these challenges to ensure that continuous improvement efforts are sustained and effective. Continuous improvement is a vital aspect of education reform in the Philippines. By implementing initiatives such as the K to 12 curriculum, enhancing teacher professional development, and promoting school-based management, the Philippines is working towards improving the quality of education and student outcomes.

The study of Park et al., (2013) about *Continuous Improvement in Education*, defines "continuous improvement" as the act of integrating quality improvement into the daily work of individuals respective to its system. Continuous improvement of an organization is characterized by three features following the regularity, relatedness and in-depth integration and contextualization within the system of work processes. Continuous improvement thereby focuses on the improvement of practices integrated by the individuals daily

and be able to provide an outcome that may be a basis for improvement. As per the study of Best and Dunlop (2014), continuous improvement is a process of repeated effort to solve problem to improve outcome or expected results.

Kim and Anderson (2019) published an article entitled "*improving 21st century-teaching skills: the key to effective 21st century-learners"* emphasizes the notion that teachers should be considered as learners also. This notion specifically aims to evaluate the teacher's competencies and proficiencies that may heavily influence the way teachers deliver the appropriate knowledge to the learners. The standard skillsets under the 21st century-learners are being emphasized in different frameworks of education, however, there has been concerns in how the learners develop these skillsets if the teacher has been left in new practices of delivering knowledge to the students. Thus, continuous improvement of teachers is a must to match the needs of 21st century-learners. The book of Darling-Hammond (2015) about *Getting Teacher Evaluation Right*, states that there is a need for regular teacher evaluation as part of teaching and learning system that supports continuous improvement both as a professional and as an individual. The educational system should enhance teacher learning and skills through comprehensive programs for development, support and assessment of teaching using reliable tools that measure effectiveness and proficiency of teachers.

Link between Science Teacher Proficiency and Continuous Improvement through Faculty Enhancement

Science teacher proficiency is essential for effective science education. Proficient teachers can inspire students, facilitate understanding of complex scientific concepts, and promote critical thinking and problem-solving skills (Gonzalez, 2017). Continuous improvement in science education involves ongoing efforts to enhance teaching practices, curriculum development, and student learning outcomes. Faculty enhancement programs are key components of this process, providing teachers with the knowledge and skills needed to improve their practice (DepEd, 2015). Research has shown that participation in faculty enhancement programs can significantly improve science teacher proficiency. For example, a study by Alilio (2020) found that teachers who participated in a faculty enhancement program reported increased level of effectiveness of teaching and confidence in applying the learnings after the training they have in the classroom. The link between science teacher proficiency and continuous improvement through faculty enhancement is critical for enhancing science education in the Philippines. By investing in faculty enhancement programs and addressing the challenges associated with them, the Philippines can improve science teacher proficiency and enhance science education for all students.

In the article publish by Whitworth and Chui (2015) entitled "*Professional Development and Teacher Change: The Missing Leadership Link*" states that the goal of professional development in science education is to help teachers learn and, in turn, enhances students' achievement. In this study, the authors use Desimone's model as a guide to explore literature on effective professional development, its connection to changes in teachers, and its impact on student achievement. It also emphasizes the crucial role of school and district leaders in science education in continuous improvement through professional development as a vital component. Advanced teaching methods are necessary to cultivate students' skills like in-depth understanding of complex content, critical thinking, intricate problem-solving, proficient communication, collaboration, and self-guided learning. Consequently, teachers require effective professional development to acquire and improve the pedagogical skills necessary for teaching these competencies, (Darling-Hammond, Hyler, and Gardner, 2017).

Teachers must take a proactive role in planning, organizing, and carrying out professional development opportunities allowing educators to choose between attending professional development is essential to gaining instructors' dedication and learning motivation and guarantee that instructors carry out school reform to the highest standard (Fekede, 2017). Likewise, Fekede (2017) stated also that one-shot work-shop staff meeting with guest speaker based on the traditional model of professional development has been deemed ineffective since it produces minimal changes and improvement. Rather, professional

development must become part of the daily work of educator and become an integral part of school culture involving follow up and support to ensure continuous improvement of teachers.

Kennedy (2016) stated that the idea of Professional Development can foster continuous improvements in teaching is widely accepted. Thus, every teacher is encouraged to participate in professional development set by the institution every year. Furthermore, the teacher who participated in professional development have already developed teaching practices and have found ways to balance many competing ideas and challenges in the education setting (Kennedy, 2016).

3. Methodology

The study utilized qualitative research design in the form of a case study. A case study is a methodology commonly used in social and life sciences. A "case study" can be defined as an intensive study about a person, a group of people or unit which examines complex phenomenon in the natural setting to increase understanding (Heale & Twycross, 2017). Case study as cited by Karlsson (2016), helps explain the "how" and "why" something happened. Moreover, a case study generally is an in-depth investigation of a phenomenon in real-life context which offers the opportunity to study phenomenon within the context, thereby developing a deeper understanding of how it relates to its context. In this study, a case study serves as the basis for generating knowledge about the science teacher's experiences toward continuous improvement.

The participants were the 12 Junior High School Science Teacher in the secondary public schools of Congressional District I in the Province of Nueva Ecija during the school year 2023-2024. The study was conducted at a selected secondary public school of Congressional District I in Nueva Ecija. These schools are strategically located in different municipalities of Nueva Ecija such as Talavera, Sto. Domingo, Licab, and Quezon to cater for the educational needs of the secondary high school students residing within and around the community. The study utilized an interview guide for teacher respondents. The first part of the interview guide gathers the demographic background of the respondents. The second part of the interview guide is to determine the science teacher's experiences related to the domains included on the Philippine Professional Standards for Teachers. Experts were tapped for validation of researcher-made interview guide.

The researcher obtained permission to conduct the study from the School Principal of different secondary public schools within the Congressional District I of Nueva Ecija. The researcher personally administered the interview guide to teacher-respondents to ensure that direction is properly discussed. Interviews and observations were likewise conducted to validate the result of the study. The data were analyzed through thematic analysis. Thematic analysis emphasizes identifying, analyzing, and interpreting qualitative data patterns. In this approach, typically employed to depict a collection of texts such as series of transcripts and meticulously identify recurring themes, including repeated concepts, subjects, or expressions (Villegas, 2023).

4. Results and Discussion

Profile of the Junior High School Science Teacher

The profile of Junior High School (JHS) Science Teachers reveals a relatively young demographic, with 60% of respondents falling in the 25-34 age range. This suggests a significant portion of the teaching force is in the early stages of their careers. In contrast, only 13.3% are aged 35-44, and a mere 6.7% are 45-54 years old, indicating a smaller presence of middle-aged and older teachers. The findings regarding the age distribution of Junior High School (JHS) Science Teachers align with existing research on the demographics of the teaching profession. Studies have shown that younger teachers, particularly those in their 20s and 30s, often make up a significant portion of the teaching workforce compared with older teachers (Naylor, 2019). This age distribution can have implications for the teaching profession, as younger teachers may bring and

communicate new ideas and approaches to the classroom effectively, while older teachers may offer experience and effective in classroom management (Mohd Ismail, Arshad, and Abas 2018).

Among the surveyed Junior High School (JHS) Science Teachers, 33.3% are male and 66.7% are female. This distribution suggests that there is a higher representation of female teachers in this group. This gender distribution may influence the dynamics within the teaching community and could potentially impact teaching styles and approaches in JHS Science classrooms. Research suggests that gender can influence teaching practices, with male and female teachers often exhibiting different styles (Achinstein et al., 2018). For example, male teachers may be more likely to use direct instruction and focus on content delivery, while female teachers may prioritize building relationships with students and creating a nurturing classroom environment (Achinstein et al., 2018). These differences in teaching styles can impact student learning experiences and outcomes.

The Junior High School (JHS) Science Teachers marital status shows that 50% are married and 50% are single. This indicates an equal distribution between married and single teachers in this group. This marital status distribution could potentially reflect different life experiences and priorities among JHS Science Teachers, which may influence their teaching approaches and interactions with students. Research on the influence of marital status on teacher performance and engagement is limited but suggests that marital status can impact various aspects of a teacher's professional life. For example, a study by Buck and Hensley (2020) found that married teachers tend to have higher levels of job satisfaction compared to single teachers. This could be attributed to the support and stability that marriage provides, which can positively affect overall well-being and job performance.

The data about the number of dependents indicates that among the surveyed Junior High School (JHS) Science Teachers, 41.7% have no dependents, while 58.3% have 1-2 dependents. This distribution suggests that a majority of JHS Science Teachers have at least some dependents, which could include children, spouses, or other family members. Research on the impact of dependents on teacher performance is limited, but there are studies that suggest having dependents can affect teachers' job satisfaction and performance. For example, a study by Erdamar and Demirel (2014) shows that the work life of a teacher is affected by variables related to family such as number of dependents and support from family at the same time creating conflict with family life. This could be attributed to the additional responsibilities and financial pressures that come with supporting a family.

Of the Junior High School (JHS) Science Teachers, 91.7% hold the title of Teacher I, while only 8.3% are Teacher II. This distribution suggests that the majority of JHS Science Teachers in the sample are in the Teacher I position, which may indicate a relatively early career stage for many of these teachers. Research on teacher positions in educational settings often focuses on the roles and responsibilities associated with different positions. Teacher I positions are typically entry-level or beginning teaching positions, while Teacher II positions may indicate a higher level of experience or tenure in the profession. Teachers in the early stages of their careers, such as those in Teacher I positions, may be more focused on developing their teaching skills and establishing themselves in their roles. They may be more open to trying new teaching methods and approaches as they gain experience and confidence in their abilities (Darling-Hammond, 2018).

With the years of teaching experience, the data shows that among the surveyed Junior High School (JHS) Science Teachers, 16.7% have less than 1 year of teaching experience, 33.3% have 1 to 2 years of experience, and 50% have 3 to 5 years of experience. This distribution suggests that the majority of JHS Science Teachers in the sample are relatively early in their teaching careers, with fewer teachers having more than 5 years of experience. Research on the impact of teaching experience on teaching practices and student outcomes can provide valuable insights into the implications of the experience levels of JHS Science Teachers. Studies have shown that teachers' years of teaching experience has influence on the academic achievement and learning of the students (Anyiam, 2023). Experienced teachers often have a deeper understanding of subject matter and pedagogy, allowing them to design more effective instructional strategies and classroom activities.

Additional data about highest educational attainment indicates that among the surveyed Junior High School (JHS) Science Teachers, 41.7% hold a bachelor's degree, 16.7% hold a master's degree, and another 41.7% have earned Masters' Degree units. This distribution suggests a relatively even split between those with bachelor's Degrees and those with some form of master's level education. This variety in educational backgrounds may influence teaching approaches and professional development interests among JHS Science Teachers. Research on the relationship between teachers' educational attainment and teaching effectiveness can shed light on the potential implications of the educational backgrounds of JHS Science Teachers. Studies have shown that teachers with higher levels of education tend to be more effective in promoting student learning and achievement (Goldhaber & Brewer, 2018). Teachers with advanced degrees often have a deeper understanding of their subject matter and pedagogy, which can translate into more effective teaching practices.

The Science Teacher experiences in considering content knowledge and pedagogy, learning environment and diversity of learners, curriculum and planning, assessment and reporting, and personal growth and professional development.

The study focuses on several key themes that emerged from the interviews, including the commitment to continuous improvement in science teaching, the creation of inclusive learning environments, the alignment and effectiveness of the science curriculum, and the use of comprehensive assessment strategies. These themes shed light on the teachers' perspectives, practices, and challenges, providing valuable insights into the current state of science education and the efforts made by teachers to enhance their teaching practices.

Content Knowledge and Pedagogy

The theme 'Commitment to Continuous Improvement in Science Teaching' highlights the importance placed by the teacher-respondents on both content knowledge and pedagogy. This commitment emphasizes most of the junior high school science teachers' commitment to the continuous refinement of their teaching methods to improve student learning, as well as their dedication to comprehending scientific content. A teacher's dedication and ongoing efforts to improve their teaching practices in the field of science are characterized by their commitment to continuous improvement, as per Rivera (2018). This commitment entails a dedication to the continuous acquisition, adaptation, and refinement of teaching methods, strategies, and content knowledge in order to enhance the overall efficacy of teaching and better meet the needs of students. It is indicative of a proactive approach to professional growth and development, with an emphasis on the promotion of student learning and engagement and the provision of high-quality science education.

The respondents' responses regarding their experiences in implementing the set of standards in terms of content knowledge and pedagogy tools to facilitate the continuous growth and development of faculty members were as follows:

"I continually strive to enhance my teaching practice by integrating new pedagogical strategies align with research-based best practices and meet the needs of my students."

"I integrate real-world applications into my lessons to enhance my students' understanding in several ways: contextualization, problem-based learning and hands-on experiments and demonstrations."

"I attend seminars or workshops might be face to face or online. Reading articles that is related to my field, talking to my peers and exchanging of ideas which at the end of the end makes me reflect on my own knowledge. At the same time, continuous education."

"I regularly learn from reputable sources following curriculum, participated in professional communications, used educational technology, attended professional development, and seek feedback for improvement."

"Continuous improvement in science teaching is a journey of lifelong learning. I am committed to staying curious, exploring new ideas, and refining my teaching methods to inspire my students and foster a

deeper understanding of science."

"I believe that to be an effective science teacher, I must always strive to improve my teaching methods and stay updated with the latest developments in science education."

"Attending workshops, seminars, and conferences is essential for me to enhance my skills and knowledge in science education and provide the best learning experience for my students."

"Staying connected with professional organizations, attending conferences or workshops, subscribing to scientific journals, engaging with colleagues, participating in discussions, pursuing continuous education through courses or webinars, collaborating on research projects, conducting experiments, attending seminars, reflecting on teaching practices, seeking feedback, and regularly evaluating and updating curriculum."

"As a science teacher, I see myself as a facilitator of learning. I am dedicated to seeking out new strategies and resources that will engage my students and enhance their understanding of complex scientific concepts."

Additionally, Darling-Hammond, Hyler, and Gardner (2017) underscore the critical importance of effective teacher professional development in the improvement of teaching practices. They contend that professional development should be job-embedded and continual in order to encourage continuous improvement. This method is essential for adapting to the changing requirements of the education system and students. In order to address new challenges, incorporate innovative instructional strategies, and remain informed about developments in their field, teachers must consistently adapt their practices. Guskey and Huberman (2015) expands upon this concept by emphasizing the importance of continuous support and educational opportunities for educators.

Professional development should not be perceived as a singular event, but rather as a continuous process that equips educators with the necessary tools and knowledge to continuously enhance their practice. Teachers require opportunities to engage in collaborative learning with their colleagues, receive feedback, and reflect on their teaching in order to improve their effectiveness in the classroom. Consequently, these investigations emphasize the significance of ongoing enhancements in instructional methodologies. They emphasize the importance of teachers participating in continuous professional development to enhance student outcomes, refine their skills, and remain up to date.

Learning Environment and Diversity of Learners

Regarding the Learning Environment and Diversity of Learners, the theme of "inclusive learning environment" is the most prominent aspect. Eleven among the twelve respondents puts emphasis of on the establishment of a supportive and inclusive learning environment in science classes, with a particular emphasis on the necessity of addressing the various learning requirements and backgrounds of students.

The establishment of a classroom environment that is inclusive and conducive to the diverse requirements of all students uses practical strategies and approaches, as per Salend (2019). It encompasses a variety of strategies and practices that are designed to guarantee that every student, irrespective of their origin, abilities, or learning styles, feels respected, valued, and integrated into the learning process. This theme underscores the significance of equity, diversity, and inclusivity in education, emphasizing the necessity of adjusting to the unique learning styles and requirements of students in order to foster their success.

In an inclusive learning environment, educators endeavor to establish a secure and encouraging atmosphere in which students are at ease expressing themselves, exchanging ideas, and participating in educational activities. This frequently entails the integration of diverse perspectives and experiences into the curriculum, the provision of accommodations for students with disabilities, and the implementation of differentiated instruction to address the unique requirements of each student.

The respondents provided the following responses regarding their experiences in implementing the set of standards in the context of the learning environment and the diversity of learners, with the intention of fostering the ongoing growth and development of faculty members:

"I create a supportive and inclusive learning environment for all students in my classes by implementing the following strategies: establishing clear expectations, building positive relationships, differentiating instruction, cultivating a safe space, promoting collaboration, incorporating culturally relevant pedagogy, addressing implicit bias, and providing support services."

"Creating an inclusive learning environment is crucial for ensuring that all students have equal opportunities to succeed. This means recognizing and valuing the diversity of our students and creating a classroom where everyone feels respected and supported."

"I believe that an inclusive learning environment is one where every student feels like they belong, regardless of their background, abilities, or differences. It's about creating a community where everyone is respected and supported in their learning journey."

"In my classroom, I strive to create an inclusive environment where all students feel welcome and valued. I encourage collaboration and respect for diverse perspectives, creating a space where everyone's voice is heard and respected."

"Creating a supportive and inclusive learning environment for all students in my science classes is crucial for students' academic success and overall well-being."

"Offer opportunities for students to demonstrate their understanding in various ways, such as through projects, discussions, or hands-on activities. By being proactive in creating a safe, welcoming, and accommodating classroom environment, I can help all students thrive and reach their full potential in my science classes."

"By promoting respect, valuing diverse perspectives, offering differentiated instruction, and providing opportunities for active participation and collaboration. Also, by giving all students equal opportunities to succeed. When teaching motion, I differentiated instruction by providing various activities tailored to different learning experiments, such as incorporating motion graphs and auditory elements."

"I encourage culturally relevant practices into my teaching by linking science concepts to students' cultures, giving examples of phenomena and perspectives from diverse cultures into lessons."

"An inclusive learning environment is one where students feel safe to be themselves, where differences are celebrated, and where every student has the opportunity to reach their full potential."

Furthermore, Galindo and Vera (2019) have emphasized the importance of faculty development in the establishment of inclusive college classrooms. They emphasize the necessity of continuous professional development to assist faculty members in the acquisition of the requisite skills and knowledge to establish inclusive learning environments that facilitate the success of all students, with a particular emphasis on those from diverse backgrounds. This emphasizes the significance of ongoing growth and development among faculty members to ensure an inclusive educational experience and to meet the changing requirements of students. In summary, the significance of establishing a supportive and inclusive environment in science classes is emphasized by the theme of an inclusive learning environment. Teachers can foster a learning environment in which all students feel valued and supported by implementing strategies that promote equity, diversity, and inclusivity. Ultimately, this will increase student engagement and success in science education.

Curriculum and Planning

In the context of curriculum and planning, the majority of the respondents' experiences central in the theme "Curriculum Alignment and Effectiveness". In which, the primary objective is to assess the efficacy of the science curriculum and make necessary modifications to ensure that it is in accordance with national or state standards and guidelines. It comprises strategies for the following: the integration of interdisciplinary connections, the planning of lessons and units in a coherent manner, the evaluation of curriculum efficacy through student performance data, the incorporation of student interests and feedback, and the alignment of the curriculum with standards.

The process of guaranteeing that the content, instruction, assessments, and standards of a curriculum are all interconnected and aligned with the same educational objectives, as per Smith (2018). It entails the

development of a curriculum that is consistent with the overarching learning objectives and that each component is in harmony. Effective curriculum alignment guarantees that the curriculum, instruction, and assessment are all in accordance with the intended learning outcomes and academic standards. The respondents provided the following responses regarding their experiences in conducting the set of standards in terms of curriculum and planning instruments to facilitate the continuous growth and development of faculty members:

"I ensure that the science curriculum is aligned with national or state standards and guidelines by familiarizing myself with the relevant standards, mapping the curriculum to align with these standards, and selecting instructional materials that support the learning objectives."

"I continuously assess the effectiveness of my curriculum by analysing student performance data and adjusting my teaching strategies accordingly."

"Alignment with national standards ensures that my curriculum prepares students for standardized assessments and future academic pursuits."

"Regularly attending workshops and conferences helps me stay updated with the latest trends in science education, allowing me to refine my curriculum."

"I also integrate interdisciplinary connections into the curriculum to enhance student learning by promoting critical thinking and problem-solving skills."

"Aligning a science curriculum with national or state standards is crucial for ensuring a high-quality education. I review the standards and guidelines provided by the DepEd and map out how each component of the curriculum aligns with these standards."

"Collaboration with colleagues, professional development opportunities, and staying informed about changes in education policies support the process of aligning the curriculum with national standards."

"I ensure alignment by regularly reviewing the curriculum and mapping objectives to standards.

"I ensure alignment by always checking and following the MELCs as a guide in creating and preparing lesson plans."

"I evaluate the effectiveness of my science curriculum through student feedback, observations from colleagues and supervisors, and student assessment results. Based on these evaluations, I make adjustments as needed to improve student learning outcomes."

"By aligning my curriculum with national standards, I ensure that my students are equipped with the knowledge and skills needed for success in higher education and the workforce."

Furthermore, April G. (2023) underscores the significance of curriculum evaluation involving the effectiveness of the curriculum in achieving its intended learning objectives and results. A curriculum that is effective is one that is engaging, facilitates the learning process, and assists students in achieving their intended educational outcomes. It is consistent with industry standards and best practices, caters to the requirements of a diverse student body, and is consistently assessed and enhanced in response to feedback and data. The teacher-respondents in this study's responses are consistent with these definitions, as they exhibit a dedication to adjusting their curriculum to enhance student learning outcomes, evaluating its efficacy, and aligning it with standards. This emphasizes the significance of curriculum alignment and effectiveness in guaranteeing positive student outcomes and high-quality education. Hence, the alignment of the curriculum and its effectiveness are indispensable components of the educational process. By evaluating the efficacy of the curriculum, planning lessons coherently, integrating interdisciplinary connections, and aligning it with standards, educators can improve student learning and foster academic success.

Assessment and Reporting

One significant theme that has a standpoint in the context of Assessment and Reporting by majority of the respondents is the "Comprehensive Assessment Strategies in Science Education." This theme emphasizes the multifaceted approach to the development of assessments in the field of scientific education. It

emphasizes the utilization of a variety of assessment strategies and categories, including traditional assessments, performance-based assessments, and formative assessments, to accurately measure student learning outcomes.

In science education, comprehensive assessment strategies are the comprehensive evaluation of students' comprehension and mastery of scientific concepts and skills through the use of a variety of assessment methods and instruments, as per Brown (2020). These strategies extend beyond conventional exams and quizzes to include a variety of formative and summative assessment methods, which are designed to offer a comprehensive perspective on the learning progress and science achievement of students. The respondents provided the following responses regarding their experiences in implementing the set of standards for the purpose of assessment and reporting in order to facilitate the ongoing growth and development of faculty members:

"I design assessments to measure student learning outcomes in science by employing a variety of assessment types and strategies tailored to the specific content, skills, and objectives of the curriculum."

" I use formative assessment data to adjust teaching strategies, address student misconceptions, and adapt instruction to meet student needs."

"Plan and design assessment by aligning it to the curriculum and objective of the topic."

"Assessment is based on what I want to measure, clear and related to the concept."

"By analyzing my student assessment data to identify areas for improvement and adjust my science teaching strategies."

"I also incorporate student-centered approaches such as peer assessment and self-assessment to empower students in their learning process and promote metacognition."

"Incorporating various assessment methods allows me to gauge student understanding from different perspectives and provide targeted feedback to support their learning."

Additionally, Kim and Anderson (2019) exploration of various assessment practices, principles, research perspectives in science education encompassing the integration of variety of methods to effectively evaluate student learning. These strategies encompass formative assessments, summative assessments, performance-based assessments, authentic assessments, self-assessment and reflection activities, and peer assessment, which fosters collaboration and learning from peers' feedback, thereby improving the overall learning experience in science education. The proactive approaches of instructors to designing and implementing assessments, in conjunction with the diverse assessment strategies, contribute to a more comprehensive and effective science education system.

Educators can enhance student comprehension, modify teaching strategies, and foster a more profound level of learning by integrating a diverse array of assessment methods. These strategies, in conjunction with a dedication to ongoing development, the establishment of inclusive learning environments, and the alignment of the curriculum with standards, contribute to a more comprehensive approach to science education. By further refining their practices and adopting innovative assessment strategies, educators can better equip students for success in science and beyond.

Personal Growth and Professional Development

The "Motivation for Growth" is a significant theme that emerges in the context of Personal Growth and Professional Development based on the responses of all respondents. This theme is centered on the intrinsic and extrinsic factors that motivate educators to pursue ongoing personal and professional development in the field of science education. It emphasizes the fundamental motivators of the passion for teaching and learning, the aspiration for student success, and the conviction in lifelong learning. Motivation for growth, as defined by Rawat (2023), is a catalyst that pushes individuals to pursue personal growth and advancement driven by their intrinsic motivation to pursue their goals, overcome challenges and achieve success.

It includes the readiness to acquire new skills, challenge oneself, and pursue opportunities for

growth. This motivation can be derived from a variety of sources, including a desire for personal fulfilment, career advancement, self-improvement, or a sense of responsibility to one's job or community. Growth motivation frequently entails the establishment of objectives, the pursuit of feedback, and the active pursuit of opportunities for learning and development. The respondents provided the following responses regarding their experiences in implementing the set of standards in the context of Personal Growth and Professional Development, which are intended to facilitate the ongoing growth and development of faculty members:

"Passion for teaching and learning, commitment to students' success, lifelong learning philosophy, personal growth and fulfilment, professional recognition and advancement, impact on student learning, and a collaborative culture."

"I see teaching as a lifelong learning journey. Every day, I strive to learn something new and improve my teaching practice. This not only benefits me but also my students, as they receive a high-quality education that prepares them for the future."

"Actively pursuing professional development opportunities to enhance skills and knowledge in science education is crucial for staying up-to date with the latest trends and best practices in the field."

"I want to become a better person and teacher every day."

"If the teacher doesn't know and improve, the same goes for their students."

"I cannot offer more to my students if I stay stagnant and do nothing as a person and as a science teacher."

"My desire to enhance my teaching skills to stay current with advancements in science education, and to positively impact my students' lives."

"I envision myself as a science teacher continuously learning through professional development, embracing emerging technologies, staying abreast of evolving pedagogical trends, collaborating with interdisciplinary teams, and fostering inclusive learning environments to prepare my students for a rapidly changing world."

"I am committed to my own growth as a teacher because I believe that teaching is a dynamic profession that requires constant adaptation and improvement. By continuously learning and growing, I can better meet the needs of my students and help them succeed."

Likewise, Kang et al., (2024) stated that the motivation of science teacher to engage in professional development have relationship with their aspirations such as the desire for personal and professional development, recognition, and the necessity to remain current with the field's advancements. This commitment to continuous improvement and remaining informed about the most effective science education practices is suggested by these motivations. In summary, the theme of "Motivation for Growth" among science teachers emphasizes the intrinsic and extrinsic factors that motivate educators to perpetually enhance their personal and professional development. This motivation is driven by a dedication to student success, a fervour for teaching and learning, and a conviction in the importance of continuous learning.

Teachers regard teaching as an ongoing process of development, in which they endeavour to acquire new skills, confront obstacles, and pursue opportunities for growth. This motivation is essential for maintaining awareness of the most recent trends and best practices in scientific education, which ultimately benefits both students and teachers. Educational institutions can assist their instructors in delivering high-quality education and preparing students for the future by cultivating a culture of perpetual growth and development.

Leveraging Science Teachers' experiences toward continuous career improvement.

Fostering an environment conducive for lifelong learning and personal and professional growth needs a comprehensive, collaborative approach. Science teachers need access to quality professional development opportunities that expose them to advanced and research-based pedagogical methods which can impact students learning outcomes and experiences. Leveraging science teachers' experiences becomes a catalyst for comprehensive review and renewal with the help of school administrators or school heads, that the entire educational community will enhance teaching and learning, nurture future innovators, and exemplifies a

commitment to career-long improvement.

Implications Towards the continuous improvement for JHS science teachers

Based on the experiences of the science teachers, several implications emerge for the continuous improvement of Junior High School (JHS) science teachers. Firstly, there is a definite requirement for continuous professional development opportunities that concentrate on incorporating new teaching methods that are in line with research-based optimal practices. Teachers demonstrated a firm dedication to improving their teaching methods, expressing a willingness to stay updated with the latest developments in science education. Hence, it is imperative to offer access to pertinent seminars, workshops, and online resources in order to facilitate their development.

Moreover, the establishment of a nurturing and all-encompassing educational setting is essential for the scholastic achievement and overall welfare of students. Educators emphasized the significance of setting explicit expectations, fostering constructive relationships, tailoring instruction to individual needs, and encouraging teamwork. These strategies have a dual benefit, as they not only enhance students' learning but also facilitate the professional development of teachers by fostering a culture of collaboration and promoting personal growth and satisfaction.

Additionally, aligning the science curriculum with national or state standards is essential for ensuring a high-quality education. Teachers emphasized the need to regularly review the curriculum, map objectives to standards, and evaluate its effectiveness through student feedback and assessment results. This process of curriculum alignment and evaluation enables teachers to make informed decisions and adjustments to improve student learning outcomes. Furthermore, comprehensive assessment strategies are key to effectively measuring student learning outcomes in science education. Teachers highlighted the importance of designing assessments that are clear, related to the concept, and aligned with the curriculum and objectives of the topic. By analyzing student assessment data, teachers can identify areas for improvement and adjust their teaching strategies to meet student needs.

Lastly, motivation for growth is a critical factor in driving continuous improvement among Junior High School science teachers. Teachers expressed a passion for teaching and learning, a commitment to students' success, and a belief in lifelong learning. Providing opportunities for personal growth and professional development, as well as recognizing and rewarding teachers for their contributions, can further motivate them to enhance their teaching practice and positively impact student learning.

Hence, the implications drawn from the experiences of Junior High School science teachers highlight the importance of ongoing professional development, creating a supportive learning environment, aligning the curriculum with standards, implementing comprehensive assessment strategies, and fostering motivation for growth. By addressing these implications, schools and educational institutions can support the continuous improvement of JHS science teachers, ultimately benefiting student learning outcomes and overall academic success.

5. Conclusion

1. The study profiled 12 Junior High School Science Teachers within Congressional District I of Nueva Ecija, all of them are beginning science teachers with less than three years in experience. Most of the respondents have an age range of 25-34 years old and with slightly higher representation of female teachers. Both marital status and number of dependents are evenly distributed among the respondents. Most science teachers hold the position of Teacher I, with varying years of teaching experience. Educational attainment among the respondents varies, with some holding bachelor’s degrees, while others have completed master’s degrees, and some are taking master’s degree units. Overall, the profile provides

insight into the demographics and characteristics of Junior High School Science Teachers in the selected area.

2. The study uncovered that Junior High School science teachers are dedicated professionals with diverse backgrounds and experiences. They exhibit a strong commitment to improvement, evident in their adoption of new pedagogical approaches, creation of inclusive learning environments, alignment of curriculum with standards, implementation of comprehensive assessment strategies, and pursuit of personal and professional growth. These findings underscore the necessity of continuous professional development and support for JHS science educators.
3. The study emphasizes the critical need to support Junior High School science teachers in their journey of continuous improvement. Educational institutions should be avenues for professional development, establish nurturing learning environments, align curriculum with standards, implement effective assessment strategies, and cultivate motivation for growth. These efforts ensure that JHS science teachers are well-equipped to deliver high-quality education, catering to the diverse needs of students, and preparing them for success in the dynamic field of science.

6. Recommendation

1. Schools and educational institutions should offer regular and pertinent professional development opportunities like training courses on the latest teaching methodologies, technological advancement, and subject-specific advancements based on research tailored to Junior High School science teachers. These programs should emphasize enhancing pedagogical skills, integrating innovative teaching strategies, and keeping abreast of advancements in science education.
2. School Heads and head teachers should intensify the mentorship programs and encouraging peer collaboration as these initiatives can significantly benefit Junior High School science teachers which provide valuable guidance, feedback, and support to enhance their teaching practices. Additionally, investigating the advantage of teacher collaboration and professional learning communities (PLCs), possibly involves studying the impact of collaborative lesson planning, peer observation, and feedback on teaching effectiveness.
3. Further research into the role of technology in enhancing teaching practices is recommended to be conducted by school heads or the educational institution to fully explore its potential and foster innovative teaching methodologies. This includes exploring the use of digital tools, online resources, and virtual labs to improve student engagement and learning outcomes in science education.

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