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Senior High School Science Teachers' Attitudes, Knowledge and Skills in Alternative Assessment

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ABSTRACT: This study investigated senior high school science teachers' attitudes, knowledge, and skills in alternative assessment within the Philippine context. A descriptive-quantitative research design was employed to gather data from 60 senior high school science teachers. The findings reveal that the teachers generally possess a high level of knowledge and skills in using alternative assessment methods. They hold positive attitudes towards alternative assessment, recognizing its benefits in improving student learning and assessment effectiveness. Some reservations exist, such as time consumption and difficulty in grading. The study also found no significant differences in teachers' knowledge and attitudes based on current location in teaching, age, highest degree, and years of teaching experience. In contrast, teachers who received in-service training on alternative assessment demonstrated a significantly higher level of knowledge compared to those who did not. These findings highlight the potential of alternative assessment in senior high school science education. The need for ongoing professional development and support to enhance teachers' knowledge and skills in effectively implementing these methods is crucial. To strengthen the positive attitudes and knowledge base identified in this study, it is recommended that senior high school science teachers be provided with professional development opportunities focused on alternative assessment methods. Additionally, resources and materials should be developed to support them in designing, implementing, and evaluating these assessments. By integrating alternative assessment practices into the curriculum and teacher training programs, we can ensure these effective methods become a mainstay in senior high school science education. Further research into the effectiveness of various alternative assessment methods would provide valuable insights for continual improvement.

KEYWORDS: in-service training, positive outlook, professional development, practices, science education

INTRODUCTION

Within the realm of science education, where fostering inquiry-based learning and scientific reasoning skills is paramount, alternative assessment methods offer an avenue to assess students' understanding of scientific concepts and their ability to engage in scientific inquiry. In the landscape of modern education, the evolution of assessment methods has become imperative to keep pace with the evolving needs of students and the demands of a dynamic society (Akintayo et al., 2024). Alternative assessment methods, also known as authentic or performance-based assessment, have emerged as a promising approach to evaluate students' learning in a more comprehensive and meaningful manner (Demir et al., 2019). Unlike traditional assessment methods, which often rely heavily on standardized tests and memorization of facts, alternative assessment methods focus on assessing students' abilities to apply knowledge, think critically, solve problems, and demonstrate practical skills (Atifnigar et al., 2020).

Effective conduct of alternative assessments promotes effective teaching and learning processes for the students in the classroom set up. However, the successful implementation of alternative assessment methods hinges largely on the attitudes, knowledge, and skills of teachers (Rahman et al., 2021). Teachers play a pivotal role in designing, implementing, and evaluating assessment tasks that align with the goals of science education and promote deeper learning experiences for students (Koocharoenpisal, 2023). Senior high school

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teachers are one of the prime movers in developing alternative assessment that will help the senior high students develop their skills and practical applications of learning (Davis & Gbormittah, 2023). Their beliefs, perceptions, and competencies shape the assessment practices adopted in the classroom and influence students' learning experiences and outcomes (Walls & Johnston, 2023). Therefore, understanding and addressing the factors that influence teachers' attitudes, knowledge, and skills in alternative assessment is crucial for enhancing the quality of science education in senior high schools.

In the Philippines, the implementation of the K to 12 curricula which is the Republic Act 10533 of 2013 has brought about significant changes in the education system, particularly in senior high school education (Barrot, 2021). The senior high school curriculum emphasizes the development of critical thinking, problem-solving, and inquiry skills among students, with science education playing a central role in achieving these goals. With the shift towards competency-based learning and the integration of inquiry-based approaches in science teaching, there is a growing recognition of the importance of alternative assessment methods in assessing students' attainment of learning standards and competencies (del Valle, 2021).

Despite the potential benefits of alternative assessment methods, there are challenges that hinder their effective implementation in senior high school science classrooms. One such challenge is the limited familiarity and understanding of alternative assessment methods among teachers. Many teachers may lack the necessary training and professional development opportunities to effectively design, implement, and evaluate alternative assessment tasks (Lam, 2019). Additionally, there may be misconceptions or resistance towards alternative assessment methods due to traditional views of assessment as synonymous with standardized testing and grades (Chang et al., 2020).

Even with the growing recognition of the importance of alternative assessment methods in science education, there is a notable gap in research concerning senior high school teachers' skills and knowledge in alternative assessment, particularly within the Philippine context (Sarmiento et al., 2020). Given the critical role of teachers in shaping assessment practices and facilitating student learning, it is essential to investigate the attitudes, knowledge, and skills of senior high school science teachers in alternative assessment. Educators and policymakers can develop targeted interventions and professional development programs to support teachers in enhancing their assessment practices by understanding the factors that influence teachers' adoption and implementation of alternative assessment methods. Thus, this study seeks to address this gap by exploring senior high school science teachers' attitudes, knowledge, and skills in alternative assessment within the Philippine context. This study aims to investigate the attitudes, knowledge, and skills in alternative assessment among senior high school science teachers by seeking to answer the specific questions: 1.) What are senior high school science teachers' knowledge and skills in alternative assessment; 2.) What are senior high school science teachers' attitudes towards alternative assessment; and 3.) Do senior high school science teachers differ in their knowledge and attitudes towards alternative assessment based on their current location in teaching, age, highest degree, years in teaching experience, and in-service training on alternative assessments.

This current study holds significance in addressing the lack of research focused on enhancing senior high school science teachers' attitudes, knowledge, and skills in alternative assessments in the local classroom set up. Senior high science teachers can improve their alternative assessments techniques and strategies like using different classroom activities and tools to better evaluate the practical performance of the students. The findings of this study can inform targeted interventions and professional development programs aimed at improving the quality of science education in senior high schools. Ultimately, this can contribute to better student learning outcomes and overall educational advancement. The researchers believe that effective implementation of alternative assessment methods in senior high school science classrooms requires a thorough understanding of teachers' attitudes, knowledge, and skills. By addressing the challenges and opportunities in this area, educators and policymakers can promote the use of alternative assessment methods to enhance student learning experiences and outcomes in science education.

METHODS

Research Design

The study used a quantitative research design employing descriptive methods to describe and investigate the attitudes knowledge and skills in alternative assessment among the senior high school teachers. Quantitative research design values breadth,

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statistical descriptions, and generalizability (Leavy, 2023). On the other hand, descriptive method looks into the characteristics of the variations of population.

Sampling Design and Participants of the Study

Convenience Sampling was used as a sampling technique to gather data from participants. The participants of the study were the senior high school science teachers living in Butuan City and Surigao City.

Survey Instrument

The survey questionnaire was adopted to the study of Al-Nouh et al., (2014) for their research entitled "EFL Primary School Teachers' Attitudes, Knowledge and Skills in Alternative Assessment" incorporating both closed-ended and Likert-scale questions to capture various aspects of senior high school science teachers' attitude, knowledge, and skills in alternative assessment. The questionnaire consisted of 43 five-point Likert-type items and was composed of three sections. The first section concerned teachers' demographic profile, including current location in teaching, age, highest degree, year in teaching experience, and in-service training in alternative assessment. The second section concerned senior high school science teachers' skills and knowledge in alternative assessment and consisted of 18 items. Responses were obtained on a 5-point Likert scale ranging from "strongly agree" to 'strongly disagree'. The last section concerned teachers' attitudes towards alternative assessment and consisted of 25 items. Responses were obtained on a 5-point Likert scale ranging from "Always" to "Never".

Data Gathering Procedures

The researchers wrote a consent letter signed by their course instructor to conduct data gathering to the participants. The researchers used google form as an instrument in data collection; the questions were encoded in the form, this data gathering technique is supported by a study conducted by Gunawan et al., 2023. Participants were given free time to respond to the research survey. The participant's name was considered optional under the Data Privacy Act of 2012. Participation in the study was voluntary, and prior consent was obtained. Only the researchers have access to each participant's responses.

Statistical Treatment

Descriptive statistics were employed to analyze the data. Frequencies, percentages, means, and standard deviations were used to describe teachers' attitudes, skills, and knowledge in alternative assessment.

For statistical analysis, participants' perceptions were categorized into three levels: high, medium, and low. For example, the high value in Likert scale (i.e., 5.00) is subtracted from the low value (i.e., 1.00) and divided by the three levels.

- 1.00 + 1.33 = 2.33
- 2.33 + 1.33 = 3.66
- 3.66 + 1.33 = 5.00

Based on the above, means were calculated as follows:

- (From 1–2.33) indicates a low-value mean
- (From 2.34–3.66) indicates a medium-value mean
- (From 3.67–5.00) indicates a high-value mean

A Mann-Whitney U test and Kruskal-Wallis Test were further conducted to detect significant differences in teachers' knowledge and attitude in relation to teachers' current location in teaching, age, highest degree, years in teaching experience, and in-service training in alternative assessments. Mann-Whitney U test is conducted to determine whether there is a significant difference in the knowledge and attitude toward Alternative Assessment among groups with only two categories. As a rule of thumb, if p-value is lesser than the α-level (usually set at 5% or 0.05), then there is a significant difference. Otherwise, there is no significant difference. Moreover, Kruskal-Wallis Test is conducted to determine whether there is a significant difference in the knowledge and attitude toward Alternative Assessment among groups with more than two categories. As a rule of thumb, if p-value is lesser than the α-level (usually set at 5% or 0.05), then there is a significant difference. Otherwise, there is no significant difference. In case that the significant difference exists, Dunn's test (multiple comparison test) will be conducted to determine which among the groups are significantly different from each other.

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RESULTS AND DISCUSSION

A. Demographic Profile of the participants that were used in the study

Table I. Profile of the Participants

Profile	F	%
Current Location in Teaching		
Butuan City	30	50
Surigao City	30	50
TOTAL	60	100
Age		
21-25	16	26.7
26-30	26	43.3
31-35	4	6.7
36-40	7	11.7
41-45	4	6.7
46-50	1	1.7
51-55	1	1.7
56-60	1	1.7
TOTAL	60	100
Highest Degree		
Bachelor	26	43.3
Masteral	33	55
Doctoral	1	1.7
TOTAL	60	100
Years in Teaching Experience		
1-5	39	65
6-10	15	25
11-15	1	1.7
16-20	1	1.7
21-30	2	3.3
30 years and above	2	3.3
TOTAL	60	100
In-service training in alternative assessments		
No training	17	28.3
With training	43	71.7
TOTAL	60	100

The demographic profile of the responders is displayed in Table 1. It demonstrates that the age distribution of the respondents is as follows: 43.3% of the samples are between the ages of 26 and 30, and 26.7% are between the ages of 21 and 25. With over two-thirds of the teachers in their 20s and nearly a fifth in their 30s, this suggests that the majority of senior high school science teachers in the study are relatively young (Tamban & Maningas, 2020). Based from the table, 55% of the teachers held a Master's degree, followed by a Bachelor's degree with 43.3% and a Doctorate with 1.7%. The findings indicate that the educators possess a solid comprehension of the personality traits necessary for their line of work. According to the findings, most senior high school science teachers had between one and five years of teaching experience. This indicates that they generally have a favorable disposition toward incorporating alternative assessment strategies into their instructional practices (Agmanda & Sumarmin, 2020; Yuan et al., 2021 Xiangping & Zhu, 2022). It suggests that the majority of the instructors were recent grads. Finally, the majority of respondents (71.70%) who received in-service training in alternative assessment, while 28.30% of teachers did not receive any training in

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alternative assessment. As per the study's findings, science teachers in senior high school have a positive outlook on their role in the teaching profession. They are highly committed to their work and are open to implementing new instructional strategies, like alternative assessment methods (Nilawati et al., 2019; Iskandarova et al., 2023).

B. Senior high school science teachers' knowledge and skills in alternative assessment

Table II. Senior high school science teachers' knowledge and skills towards alternative assessment

No.	Statements	Mean	SD	Rank
1	I know how to use portfolios to assess student performance.	4.50	0.624	High
2	I guide students to collect materials for portfolio assessment.	4.50	0.567	High
3	**I use classroom observation to assess students during activities.**	**4.63**	**0.676**	**High**
4	I know how to design classroom-based tests.	4.47	0.676	High
5	I can assess student performance during role plays.	4.57	0.647	High
6	In addition to grades, I can give students written descriptions on their report cards.	4.35	0.820	High
7	I know how to assess students through oral questioning.	4.55	0.565	High
8	I have enough skill to implement alternative assessment.	4.37	0.663	High
9	I use the results of alternative assessment to make useful decisions for students.	4.38	0.555	High
10	I read research about the latest methods in alternative assessment.	4.10	1.00	High
11	I feel very confident when I use alternative assessment.	4.27	0.733	High
12	I know how to assess students by using group & pair work.	4.50	0.537	High
13	I use classroom-based tests in addition to alternative assessment.	4.38	0.613	High
14	I can choose the kind of alternative assessment that suits the skill being assessed.	4.42	0.530	High
15	I feel confident using traditional written tests.	4.18	0.676	High
16	**I don't need a training course in alternative assessment because I'm qualified.**	**2.87**	**1.32**	**Medium**
17	Alternative assessment assesses students through multiple tests.	3.88	1.01	High
18	I prefer using traditional written tests to alternative assessment.	3.63	0.956	High
	Overall Weighted Mean	4.25		High

Table 2 presents the results of a study on senior high school science teachers' knowledge and skills towards alternative assessment. Teachers reported being confident in using portfolios to assess student performance, guiding students to collect materials for portfolio assessment, and using classroom observation to assess students during activities (Manigbas & De Luna, 2023). They also demonstrated knowledge in designing classroom-based tests, assessing student performance during role plays, and providing written descriptions on report cards in addition to grades (Hung and Wu, 2023). Furthermore, teachers were skilled in assessing students through oral questioning and group and pair work. The results also found that teachers were familiar with the concept of alternative assessment and its multiple forms, such as classroom-based tests and role plays (Aliakbar et al., 2023). However, some teachers expressed a preference for traditional written tests over alternative assessment methods (Otto & Estrada, 2019). Additionally, a significant portion of teachers felt that they did not need training in alternative assessment because they believed that they were already qualified.

Moreover, the results indicate that the teachers generally have a high level of knowledge and skills in using alternative assessment methods, with an overall weighted mean of 4.25. These highlights the importance of alternative assessment methods in senior high school science education and the need for teachers to be proficient in using these methods effectively. This suggest that teachers should be provided with more training and support to enhance their skills in alternative assessment and to better serve their students (Gipila, 2020).

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C. Senior high school science teachers' attitudes towards alternative assessment

Table III. Senior high school science teachers' attitudes towards alternative assessment

No.	Statements	Mean	SD	Rank
1	Portfolio assessment improves pupil self-assessment ability.	4.25	0.876	High
2	**Alternative assessment is not useful.**	**2.12**	**1.17**	**Low**
3	Formative assessment is more important than summative assessment.	3.00	1.30	Medium
4	It is better to use alternative assessment instead of traditional written tests.	3.60	0.741	Medium
5	Using portfolios to assess pupils is time-consuming.	3.25	1.07	Medium
6	It is necessary to hold workshops on the use of alternative assessment.	4.23	0.767	High
7	**Alternative assessment plays an important role in teaching.**	**4.58**	**0.591**	**High**
8	Traditional written tests are more effective than alternative assessment in assessing student language skills.	3.40	0.978	Medium
9	Alternative assessment helps the teacher assess student performance in the language skills.	4.18	0.725	High
10	With alternative assessment the teacher can discover students' difficulties in learning.	4.17	0.867	High
11	Alternative assessment lowers students' anxiety.	3.62	0.958	Medium
12	Alternative assessment helps students understand their learning problems.	4.15	0.709	High
13	Alternative assessment helps students learn language easily.	4.02	0.770	High
14	Alternative assessment is interesting.	4.42	0.696	High
15	Alternative assessment makes parents care about their children's performance more than their grades.	3.87	1.05	High
16	With alternative assessment parents are better informed about their children's progress.	4.13	0.873	High
17	Classroom-based tests are used to assess students' performance more than alternative assessment.	3.68	1.02	High
18	It is better to assess students' performance daily during class.	4.25	0.836	High
19	It is better to assess students at midterms or at the end of the year.	3.25	1.16	Medium
20	It is difficult to grade with alternative assessment.	3.05	0.872	Medium
21	Alternative assessment is more important than traditional written tests.	3.22	0.904	Medium
22	Alternative assessment helps students develop practical skills to use English.	4.27	0.841	High
23	Alternative assessment is widely used.	4.00	0.902	High
24	Alternative assessment enhances students' learning motivation.	4.17	0.785	High
25	Managing classrooms during alternative assessment is difficult.	3.30	1.05	Medium
	Overall Weighted Mean	3.77		High

Table 3 presents the attitudes of senior high school science teachers towards alternative assessment methods. The highest ranked statements are those that emphasize the benefits of alternative assessment in improving pupil self-assessment ability, enhancing students' learning motivation, and helping teachers assess student performance more effectively.

The teachers' positive attitudes towards alternative assessment are reflected in their views that it improves pupil self-assessment ability, enhances learning motivation, and helps teachers assess student performance more effectively (Abrantes & Bargamento). They also believe that alternative assessment is more important than traditional written tests and that it plays an important role in teaching (Putra & Agunista, 2020). Additionally, the teachers find alternative assessment to be interesting and widely used, which suggests that they are open to exploring new methods of assessment.

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However, there are some reservations expressed by the teachers. For instance, they find that alternative assessment can be time-consuming and difficult to grade (Statements 5 & 20). They also believe that traditional written tests are more effective in assessing student language skills. These concerns highlight the need for further training and support to help teachers effectively implement alternative assessment methods (Co et al., 2021).

Overall, the results indicate that the teachers generally hold positive attitudes towards alternative assessment, with a weighted mean of 3.77. The results suggest that senior high school science teachers are generally supportive of alternative assessment methods and recognize their potential benefits. However, they also acknowledge the challenges and limitations associated with these methods, which underscores the importance of ongoing professional development and collaboration to ensure successful implementation (Bacus & Alda, 2022).

D. Difference in the knowledge and attitude toward Alternative Assessment (AA) among location

Table IV. Significant difference in the knowledge and attitude toward Alternative Assessment (AA) among location

Dependent Variable	Grouping Variable	Mean	Test statistics	p-value	Remark
Knowledge on AA	Butuan City	4.361 (a)	571.5	0.073	No significant difference at α=0.05
	Surigao City	4.144 (a)			
Attitude on AA	Butuan City	3.784 (a)	494.0	0.520	No significant difference at α=0.05
	Surigao City	3.755 (a)			

(a) The same letters of the means indicate no significant difference (p>0.05)

Table 4 shows the result of the significant difference in the knowledge and attitude toward Alternative Assessment (AA) among location. As shown, the Mann-Whitney U test yields a test-statistics of 571.5 and 494.0 with p-value of 0.073 and 0.520, respectively, resulting in no significant difference in the knowledge and attitude among teachers from Butuan and Surigao city. Hence, the knowledge and attitude toward alternative assessment of the teachers located in Butuan and Surigao city were the same. According to the study of Wetcho et al., (2022) that teachers have necessary knowledge and attitude to design suitable content for remote teaching but the main challenges and strategies remain in the areas of student motivation, assessment, and classroom management.

E. Difference in the knowledge and attitude toward Alternative Assessment among Age categories

Table V. Significant difference in the knowledge and attitude toward Alternative Assessment among Age categories

Dependent Variable	Grouping Variable	Mean	Test statistics	p-value	Remark
Knowledge on AA	21-25 years old	4.052 (a)	5.4	0.249	No significant difference at α=0.05
	26-30 years old	4.308 (a)			
	31-35 years old	4.389 (a)			
	36-40 years old	4.492 (a)			
	41-45 years old	4.153 (a)			
Attitude on AA	21-25 years old	3.748 (a)	3.021	0.554	No significant difference at α=0.05
	26-30 years old	3.842 (a)			
	31-35 years old	3.870 (a)			
	36-40 years old	3.823 (a)			
	41-45 years old	3.590 (a)			

(a) The same letters of the means indicate no significant difference (p>0.05)

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Table 5 shows the result of the significant difference in the knowledge and attitude toward Alternative Assessment (AA) among ages. As shown, the Krustal-Wallis test yields test-statistics of 5.4 and 3.021 with p-value of 0.249 and 0.554, respectively, resulting in no significant difference in the knowledge and attitude among teachers with respect to age. Hence, the knowledge and attitude toward alternative assessment of the teachers were the same regardless of age. A study reveals that teachers are obliged to evaluate their students' knowledge, behavior, and diligence in the form of grades but prefer to use alternative assessment methods because they find grading insufficient to fulfill several roles hence by fulfilling this aim to evaluate the students happen in their daily teaching practice, which leads to autonomous, lifelong learning (Barbarics, 2019).

F. Difference in the knowledge and attitude toward Alternative Assessment (AA) among highest degree

Table VI. Significant difference in the knowledge and attitude toward Alternative Assessment (AA) among highest degree

Dependent Variable	Grouping Variable	Mean	Test statistics	p-value	Remark
Knowledge on AA	Bachelor	4.160 (a)	344.5	0.199	No significant difference at α=0.05
	Master	4.303 (a)			
Attitude on AA	Bachelor	3.728 (a)	375.0	0.413	No significant difference at α=0.05
	Master	3.799 (a)			

(a) The same letters of the means indicate no significant difference (p>0.05)

Table 6 shows the result of the significant difference in the knowledge and attitude toward Alternative Assessment (AA) among highest degree. As shown, the Mann-Whitney U test yields a test-statistics of 344.5 and 375.0 with p-value of 0.199 and 0.413, respectively, resulting in no significant difference in the knowledge and attitude among highest degree. Hence, the knowledge and attitude toward alternative assessment of the teachers were the same regardless of highest degree. It is important for the teachers to develop a sense of professional development so that they can provide a current assessment for students' learning experience (Biton & Halfon, 2024).

G. Difference in the knowledge and attitude toward Alternative Assessment (AA) among years of teaching experience

Table VII. Significant difference in the knowledge and attitude toward Alternative Assessment (AA) among among years of teaching experience

Dependent Variable	Grouping Variable	Mean	Test statistics	p-value	Remark
Knowledge on AA	1-5 years	4.238 (a)	4.781	0.189	No significant difference at α=0.05
	6-10 years	4.215 (a)			
	21-25 years	4.472 (a)			
	30 years and above	4.944 (a)			
Attitude on AA	1-5 years	3.821 (a)	2.937	0.401	No significant difference at α=0.05
	6-10 years	3.691 (a)			
	21-25 years	3.440 (a)			
	30 years and above	3.880 (a)			

(a) The same letters of the means indicate no significant difference (p>0.05)

Table 7 shows the result of the significant difference in the knowledge and attitude toward Alternative Assessment (AA) among years of teaching experience. As shown, the Krustal-Wallis test yields a test-statistics of 4.781 and 2.937 with p-value of 0.189 and 0.401, respectively, resulting in no significant difference in the knowledge and attitude among teachers with respect to years in teaching experience. Hence, the knowledge and attitude toward alternative assessment of the teachers were the same regardless of years in

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teaching experience. Teachers plays a vital role in establishing authentic teaching and learning processes of the students hence throughout the teaching experiences authentic assessments as alternative assessment promote students to develop their professional identity and awareness (Sotiriadou, 2019).

H. Difference in the knowledge and attitude toward Alternative Assessment (AA) among in-service training

Table VIII. Significant difference in the knowledge and attitude toward Alternative Assessment (AA) among in-service training

Dependent Variable	Grouping Variable	Mean	Test statistics	p-value	Remark
Knowledge on AA	No training	4.026 (b)	221.0	0.018	Significant difference at α=0.05
	With training	4.342 (a)			
Attitude on AA	No training	3.645 (a)	296.0	0.257	No significant difference at α=0.05
	With training	3.819 (a)			

(a) The same letters of the means indicate no significant difference (p>0.05)

Table 8 shows the result of the significant difference in the knowledge and attitude toward Alternative Assessment (AA) among in-service training. As shown, the there is significant difference in the knowledge of the teachers between no training and with training with a test-statistics of 221.0 and p-value of 0.018 which is less than level of significance α=0.05. Moreover, with training teachers have higher mean of knowledge with the mean of 4.342. This reveals that teachers who have in-service training on alternative assessment have significantly higher levels of knowledge on alternative assessment than those who did not have training. In order to meet the requirements of diverse children, inclusive education employs alternative assessments in some cases. As a result, it's critical that teachers receive the right training, including a focus on critical competencies for working in inclusive classrooms that use alternative assessments, and that their practical component (Kalykbayeva et al., 2022).

CONCLUSIONS AND RECOMMENDATIONS

The current study explored senior high school science teachers' perspectives on alternative assessment. The results revealed a generally positive outlook. Senior high school science teachers demonstrated strong knowledge and skills in using these methods, expressing confidence and acknowledging their benefits for student learning. They see alternative assessment as a valuable tool for improving self-assessment, motivation, and providing a more comprehensive understanding of student performance. However, not all views were unanimous. Some teachers favored traditional written tests and expressed concerns about the time investment and difficulty of grading alternative assessments. Additionally, a portion of the teachers felt they didn't require further training in this area.

Based on these findings, the study recommends ongoing professional development opportunities to further enhance the senior high school science teachers' skills in utilizing alternative assessment methods effectively. Additionally, it's important to address teachers' concerns regarding time commitment and grading challenges. Encouraging collaboration among teachers to share best practices and develop effective strategies is also suggested. Finally, fostering a school culture that values and supports the use of alternative assessment as a tool for improving student learning and achievement is crucial.

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