

DETERMINING THE CONCEPTIONS OF ASSESSMENT AMONG SECONDARY SCHOOL IN-SERVICE SCIENCE TEACHERS

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ABSTRACT

This research probed the perceptions of secondary school science teachers concerning the objective and utility of assessment, exploring the influences of gender, teaching experience, and specific science subject components. A total of 100 secondary school teachers from Selangor participated in the study, completing the Teacher's Conception of Assessment (TCoA) online questionnaire. This instrument comprised 27 statements categorized into four key aspects: Improvement, Irrelevance, School Accountability, and Student Accountability. Interestingly, the data revealed that the highest mean score was attributed to the irrelevance of assessments ($M=4.44$; $SD=0.86$), followed by assessment for improvement ($M=4.21$; $SD=0.95$), student accountability ($M=4.18$; $SD=1.32$), and lastly, school accountability ($M=4.15$; $SD=1.44$). A closer examination of the data pointed towards significant gender-based differences in teachers' perceptions of institutional accountability and educational enhancement through assessments, with female and male teachers scoring higher in these respective areas. However, the length of teaching experience did not appear to significantly affect the teachers' perceptions across any of the assessed parameters. There were noteworthy differences in teachers' perceptions of student accountability in assessments when evaluated based on the subject taught, with Biology teachers reporting higher mean scores as compared to Chemistry and Physics teachers. Additionally, teachers' perceptions regarding the improvement role of assessments and their irrelevance differed significantly across subjects, with general science teachers attaining higher mean scores than Chemistry, Biology, and Physics teachers. The findings of this study shed light on teachers' understanding of assessment, particularly in the field of Science, and serve as a valuable resource for all educational stakeholders. By understanding teachers' perceptions, policymakers and school administrators can make informed decisions that would potentially enhance teaching and learning processes.

Keywords: *Science Subject Teacher, Secondary School Teacher, Teacher Views, Conceptions of Assessment*

INTRODUCTION

The demand for persons to study science grows as science and technology advance. Science and technological advances have a direct or indirect impact on human life (Sailin & Mahmor, 2018). A high level of science and technological advancements is required for the usage of mechanical tools, chemicals, communication, and medical services (Yin, Wang, Zhao, Lou & Shen, 2021). Given the significance of scientific breakthroughs, the Malaysian government has a fundamental duty to ensure that the necessary environment is created to foster creativity and advanced scientific inventions. Enhancing educational policies, practices, and assistance at the school level is the greatest method to support science and technology advancements (Bal-Taştan, Davoudi, Masalimova, Bersanov, Kurbanov, Boiarchuk & Pavlushin, 2018).

Despite government attempts, many Malaysian students have chosen to stop taking science classes because they are uninterested in the topic (Mohd Shahali, Halim, Rasul, Osman & Mohamad Arsad, 2019). For better performance in science classes and to increase students' interest in studying them, it is necessary to discover effective solutions to this problem (Bal-Taştan, et al., 2018). One of them is to relook at the practice of the assessment among science subjects teachers (Matorevhu, 2020). The practice of assessment is crucial in all subjects and serves several purposes. Assessments that are part of the curriculum are used to gauge students' beginning knowledge and skills, track their development, and gather data for grading their performance (Payne, Burrack, Parkes, & Wesolowski, 2019).

Additionally, an assessment is stated to be significant in determining the degree of learning, subject to some constraints that students must accept (Brooks, Clenton, & Fraser, 2021). These restrictions refer to the curriculum or syllabus that is used to help define learning limits in order to accommodate the simultaneous receptive capacity of all students. As a result, all decisions about assessment results also take the selection process, measuring development, content development, and the curriculum as a whole into consideration (Wilson, 2018). As a result, education administrators will need to use all the data gathered throughout this assessment process as a primary source of reference in order to adapt and improve learning in the future.

Recently, researchers have recently developed an interest in science subjects' assessment. The significance of emphasizing assessment in shaping teaching and learning methodologies cannot be overstated (Monteiro, Mata & Santos, 2021). Indeed, it is the process of assessment that allows educators and students to interpret data and consequently make informed decisions. As Zimmer & Matthews (2022) articulated, such interpretations can lead to substantial revisions in instructional strategies and student learning, or at the very least, provide an accurate depiction of student accomplishments at a particular moment. The production and utilization of classroom data, on the other hand, do not ensure better student outcomes because the quality of the data and the ability to interpret it are important elements (Zhai, Krajcik & Pellegrino, 2021). As Zhai et al. (2021) noted that teachers' assessment approaches have a wide range of effects on student outcome indicators. Zhai et al. (2021) further illustrated assessment can be a useful, educational instrument that offers teachers and students crucial insight into student learning but it can also be low-stakes, an anxiety-inducing activity that isn't used to help inform teaching and learning.

In the realm of assessment research, understanding teachers' conceptions of assessment remains a critical area of investigation. As Brown (2008, p. 9) elucidated, "conceptions of assessment are the views individuals hold about assessment, which are shaped by their personal encounters and experiences with it." The significance of these conceptions is underscored by compelling evidence demonstrating their profound impact on the way teachers evaluate their students' learning and accomplishments (Brown & Hirschfeld, 2008; Margot & Kettler, 2019; van der Kleij, 2019; Abduh, 2021). Despite the broad implications of this area of research on pedagogical processes, there is a dearth of information about the conceptions held by secondary school science teachers and how these affect their assessment utilization. Therefore, this study primarily aimed to delve into the perspectives of assessment hold by secondary school science educators.

Science Teachers' Conceptions of Assessment

The concept of 'conception' is often synonymous with 'beliefs' (Mahasneh & Al-Zou'bi, 2021). Opre (2015) further elaborated that conceptions are based on perceptions, interpretations, preferences, and attitudes, which help explain complex structures of experiences such as assessments. Teachers' conceptions of assessments are characterized as systematic frameworks or structures of meaning, derived from their perspectives, understandings, and interactions within the teaching environment (Archambault, Leary, & Rice, 2022; Brown & Gao, 2011). From this view, teachers' conceptions of assessment are socially and culturally shared (Brown, Boda, Lemmi, & Monroe, 2019; van den Berg, 2002) and the pattern of conceptions is not uniform and simple (Schnitzler, Holzberger, & Seidel, 2021; Stamp, 1987) conceptions are multi-faceted and interconnected (Wang, 2020; Brown, 2002). A further distinguishing aspect of conceptions is that they derive from attitude; both direction (positive or negative) and strength (strong or weak) are present (Brown, 2002). It is evident that the conceptions of teachers on assessment will strongly influence what the students learn or achieve, and how learning is evaluated (Pastore & Andrade, 2019; Tittle, 1994).

In this context, in becoming knowledgeable assessors of pupils' academic performance, teachers' training and preparation are crucial to ensure the knowledge and skills in the subject matter are able to be acquired by them (Mahasneh & Al-Zou'bi, 2021). Regarding assessment, Milan (2003) posits that teachers' decision-making capabilities in evaluating students are influenced by their understanding of the role of assessment in pedagogical practices. Following this, Brown and Hirschfeld (2008) identify three key factors that typically shape teachers' conceptions of assessment: student and school accountability, educational improvement, and perceived irrelevance. The notion of accountability sees assessment as a tool for gauging student academic progress and readiness to advance to the subsequent grade (Mahasneh & Al-Zou'bi, 2021). School accountability in assessment, on the other hand, provides a means of evaluating the effectiveness of the school, teachers, and curriculum via testing and appraisal. In the Malaysian educational context, as the government moves towards a more progressive and continual assessment model, the concept of formative assessment gains prominence. Teachers' assessment practices are guided by their awareness and capacity to select and implement appropriate assessment tasks to foster learning (Longhurst, Stone, Duloher, Scully, Campbell, & Smith, 2020; Brown and Hirschfeld, 2008).

Several authors (Yan, Li, Panadero, Yang, Yang & Lao, 2021; Brown & Ramesal, 2012; Ramesal, 2007; Stipek et al., 2001) claimed that there is a strong correlation between how the conceptions of assessment are influencing teachers' assessment practices at the micro level. Andrade & Brookhart (2020) further added that teachers' conception of assessment can affect their classroom choices. It is because the criteria used by the teachers in assessing students were grounded on their belief on how assessment should be conducted and this aspect needs to be emphasized in teachers' professional development to ensure a standardized enactment of the assessment procedures at the ground level (Mahasneh & Al-Zou'bi, 2021). Hence, given the existing evidence, it is imperative for us to delve into this issue by rectifying the teachers' conceptions of assessment since this matter exerts a strong correlation between the teaching and learning process.

The Conception of Assessment and the Influence on Teachers' Pedagogy

Brown (2004) argues that teachers' conceptions of assessment are built upon their agreement or disagreement with the purposes for which assessments are integrated into their practices. Further, Brown (2004) identifies four primary conceptions of assessment that significantly influence teachers' practices. These are a) improvement teaching and learning, b) institutional accountability, c) student accountability, and d) perceiving assessment as irrelevant. The predominant view is that assessment fundamentally improves student learning and elevates the quality of teaching (Watling & Ginsburg, 2019; Brown, Lake & Mathers, 2011; Crooks, 1988). In this view, assessment is perceived as the process of diagnosing students' performance and the feedback gathered from the assessment conducted must be valid and reliable in relation to the students learning capabilities. Wilson (2018) suggested that

teachers need to employ various assessment strategies to allow students to exhibit their learning progression.

In addition, Akala (2021) conceptualized assessment as a public resource for the stakeholders. The results retrieved from the assessment are the major concern which shows the schools are doing a good job in meeting the educational standard (Louis & Kruse, 2021). The emergence of this concept is because assessment is being treated as a determinant factor in the quality of delivery of instruction among schools and teachers (Hortigüela Alcalá, Palacios Picos & López Pastor, 2019) and hence the result tabulated from the assessment are indeed crucial for public references.

Moreover, assessment is understood to be pivotal in ensuring students' accountability. In this regard, it serves as a tool for holding students responsible for their own learning. As Brown (2004) expounds, assessment imposes individual accountability on students, manifested in the allocation of grades or scores, monitoring of student performance, and various qualifying examinations taken by students for graduation or selection into advanced educational opportunities (Batool, Rashid, Nisar, Kim, Kwon & Hussain, 2022; Guthrie, 2002). In Malaysian educational settings, the certification of students via assessment has significant implications, as it directly impacts their academic trajectory, such as retention in a specific year or grade level, graduation, and academic tracking or streaming (Mohd-Ali, Norfarah, Ilya-Syazwani & Mohd-Erfy, 2019; Guthrie, 2002).

The final conception portrays assessment as a formal, systematic process of evaluating student performance, which bears no real significance to teaching and learning. According to Brown (2004), teachers' existing knowledge of curriculum and pedagogy often dissuades them from undertaking any form of assessment beyond the mental process they are already accustomed to. Furthermore, the potentially adverse impacts of assessment on teachers' autonomy and professionalism, along with its propensity to divert focus from the primary objective of teaching (i.e., student learning), can contribute to its dismissal (Cullinane, Hillier, Childs & Erduran, 2022; Dixon & Williams, 2003). It's also plausible that teachers may perceive assessments as irrelevant due to the level of accuracy (for example, the standard error of measurement) typically associated with formal assessments.

Investigating teachers' conceptions of assessment is of significant importance, as Werler & Tahirsylaj (2022) present compelling evidence on how teachers' beliefs about teaching, learning, and curricula profoundly impact their pedagogical and assessment strategies. As Su, Luo, Zhang & Zeng (2022) emphasize, teachers' beliefs about students' self-confidence, morale, creativity, and effort are closely tied to their selection of assessment methods. Tanner, McCloskey & Miller (2021) align with this understanding, asserting that given the individualized nature of assessment practices, many teachers develop their unique assessment policies and practices stemming from their distinctive values and pedagogical conceptions. Therefore, all pedagogical practices, encompassing teachers' perspectives and assessments of students' behaviour and performance, can be substantially shaped by their beliefs concerning various educational constructs, such as teaching, learning, and assessment. Consequently, this study aims to explore these conceptions among secondary science school teachers.

Research Questions:

RQ1: What are the perceptions of science subjects Teachers regarding assessment?

RQ2: Are there any significant differences in science subject teachers' conceptions of assessment according to gender, subject, and years of teaching experience?

METHODOLOGY

The descriptive research approach was utilized in this study since it's the most relevant for the aim of the research. The descriptive research approach was chosen for this study because it allows for a comprehensive and detailed exploration of the research topic (Creswell, 2012). By employing descriptive research, the study aims to provide a clear and accurate portrayal of the current state of the phenomenon under investigation. Additionally, the descriptive approach enables the collection of

quantitative and qualitative data, which is crucial for gaining a comprehensive understanding of the research subject and addressing the research objectives effectively (Creswell, 2012).

Participants

The participants in this study were all secondary school science teachers in Selangor public schools. The study sample included 100 teachers, 23 males and 77 females; 22 physics, 35 science, 20 chemistry, and 23 biology; 54 with 1-5 years of teaching experience, 25 with 6-10 years, and 21 with more than 10 years.

Study Instrument

Teachers' Conceptions of Assessment (TCoA) Instrument

The Teacher's Conception of Assessment (TCoA) inventory, developed by Brown (2006), comprises 27 items that measure four subcategories: improvement (12 items), irrelevance (9 items), school accountability (3 items), and student accountability (3 items). The responses to the TCoA are evaluated using a 5-point Likert scale, with 1 indicating strong disagreement and 5 indicating strong agreement. The TCoA inventory is a reliable tool for assessing teachers' conceptions of assessment and can be effectively employed for teacher and school professional development, as well as for use in assessment research initiatives (Brown, 2006). This study utilized the TCoA inventory to explore teachers' perceptions of assessment. To validate the internal consistency of the Malay version of TCoA, a Pearson's correlation was calculated between the total scale and its dimensions, as represented in Table 1.

Table 1

Pearson Correlation Between TCoA and Its Dimensions

Variables	School accountability	Student accountability	Assessment improves education	Assessment is irrelevant	Total scale
School accountability	1				
Student accountability	0.81*	1			
Improvement	0.65*	0.75*	1		
Irrelevant	0.15*	0.23*	0.57*	1	
Total scale	0.73*	0.80*	0.97*	0.70*	1

Note. (Level of significance = 0.01)

The correlation between the TCoA and its dimensions ranged from (r= 0.70) to (r= 0.97), and the correlation between the TCoA dimensions ranged from (r= 0.12) to (r= 0.78). Internal consistency of the TCoA was confirmed in the present study using Cronbach's Alpha (0.88, 0.89, 0.79, and 0.79) for school accountability, student accountability, improvement, and irrelevant.

Data Collection and Analysis

The TCoA was translated from English to Malay, followed by a pilot study involving 55 male and female teachers, identified as Physics, Chemistry, Science, and Biology instructors, to ensure its validity and reliability. Data from the entire sample was inputted into SPSS for analysis, yielding means, standard deviations, and a Multivariate Analysis of Variance (MANOVA). The perceptions of teachers towards assessment were categorized based on the following scale: high (4-5), moderate (2-3.99), and low (1-1.99).

RESULTS

Results of RQ1

Table 2 shows the means and standard deviations of teachers' assessment perceptions.

Table 2

Means and Standard Deviation for Teachers' Perceptions of Assessment

Variable	Mean	SD
School accountability	4.15	1.44
Student accountability	4.18	1.32
Assessment improves education	4.21	0.95
Assessment is irrelevant	4.44	0.86

Table 2 depicts the highest mean score for assessment as irrelevant (M= 4.44), followed by assessment improves education (M= 4.21), student accountability (M= 4.18), and school accountability (M= 4.15).

Results of RQ2

Table 3 presents the average values and standard deviations of teachers' perceptions of assessment, segmented by gender, subject taught, and years of teaching experience.

Table 3

Means and Standard Deviation for Teachers' Perceptions of Assessment Based on Study Variables

Variable	Level	School accountability		Student accountability		Assessment improves education		Assessment is irrelevant	
		M	SD	M	SD	M	SD	M	SD
Gender	Male	3.97	1.21	4.11	1.43	4.07	0.88	4.31	0.79
	Female	4.21	1.42	4.27	1.21	4.25	0.84	4.39	0.79
Subject	Science	4.09	1.42	4.27	1.29	4.49	0.89	4.64	0.75
	Chemistry	3.95	1.37	3.89	1.43	3.99	0.98	4.18	0.71
	Biology	3.99	1.05	3.84	0.98	4.02	0.75	4.36	0.73
	Physics	4.31	1.42	4.44	1.18	4.03	0.67	4.27	0.89
Teaching experience	1-5 years	3.93	1.39	3.98	1.31	4.06	0.87	4.24	0.88
	6-10 years	4.14	1.38	4.29	1.28	4.09	0.77	4.35	0.68
	More than 10 years	4.16	1.23	4.07	1.18	4.23	0.92	4.47	0.81

A Multivariate Analysis of Variance (MANOVA) was employed to discern significant disparities based on gender, subject taught, and years of teaching experience. The results of this analysis are depicted in Table 4.

Table 4

Results of MANOVA Analysis

Variables	Source	Sum of squares	df	Mean square	F	Sig
School accountability	Gender	7.178	1	7.178	4.665	0.05
	Subject	10.815	3	3.625	2.153	0.12
	Teaching experience	6.824	2	3.427	2.036	0.16

	Error	814.441	481	1.723		
	Corrected total	837.504	487			
Student accountability	Gender	4.117	1	4.120	2.825	0.12
	Subject	29.121	3	9.737	6.594	0.03
	Teaching experience	6.421	2	3.241	2.210	0.14
	Error	708.431	511	1.503		
	Corrected total	749.082	517			
Assessment improves education	Gender	3.181	1	3.181	4.716	0.06
	Subject	17.762	3	5.931	8.822	0.03
	Teaching experience	1.609	2	0.819	1.204	0.34
	Error	323.417	511	0.702		
	Corrected total	347.267	511			
Assessment is irrelevant	Gender	0.707	1	0.707	1.206	0.30
	Subject	13.113	3	4.391	7.606	0.03
	Teaching experience	2.633	2	1.331	2.291	0.13
	Error	276.903	511	0.606		
	Corrected total	294.446	511			

The Multivariate Analysis of Variance (MANOVA) demonstrated significant gender disparities in teachers' perceptions of school accountability in assessment, with female teachers' average score (M= 4.21) surpassing that of male teachers' (M= 3.97). There were no notable disparities in teachers' conceptions of school accountability, student accountability, the improvement role of assessment, or its irrelevance based on subject or years of teaching experience. However, gender-based differences were significant in teachers' conceptions that assessment improves education, with female teachers' mean score (M= 4.25) exceeding that of male teachers (M= 4.07). In terms of student accountability and assessment irrelevance, no significant disparities were found based on gender. Finally, as per the teachers' subject of instruction, the MANOVA revealed substantial differences in teachers' conceptions of student accountability, the educational improvement role of assessment, and its irrelevance. The Scheffe test was employed to confirm these findings.

Table 5

Results of Scheffe Test Based on Teacher Subject

Variable	Subject	Mean	Mathematics	Chemistry	Biology	Physics
Student accountability	Science	4.29				
	Chemistry	3.93				-0.49*
	Biology	3.88				-0.54*
	Physics	4.48		0.55*	0.60*	
Assessment improves education	Science	4.53	4.04	0.49*	0.47*	0.46*
	Chemistry	4.06		-0.43*		
	Biology			-0.41*		
	Physics	4.07		-0.40*		
Assessment is irrelevant	Science	4.65		0.47*	0.29*	0.44*
	Chemistry	4.18		-0.44*		
	Biology	4.39		-0.23*		
	Physics	4.30		-0.32*		

Referring to Table 5 above, physics teachers had a higher average score than chemistry and biology teachers. Not only that, but there are also significant differences between subjects in terms of assessment improves education and assessment being irrelevant, with science teachers scoring higher than chemistry, biology, and physics teachers.

DISCUSSION

This study aimed to explore the perceptions of secondary school science teachers towards assessment. The findings indicated that the highest average score in teacher conceptions of assessment was attributed to the notion that assessment is irrelevant to education (M= 4.44). This implies that the participants strongly agreed that assessment has minimal influence on teaching. This could be a response from teachers who view assessment negatively, possibly because it compromises their autonomy, or due to their belief that teaching and assessment are equivalent (Takrouni & Assalahi, 2022). The mean score for teacher conceptions of assessment pertaining to the improvement of education was 4.21, reflecting strong agreement among the participants that assessment verifies whether students meet academic standards. As posited by Brown (2002), the aim of this conception is to enhance both the quality of teaching and students' learning outcomes.

Moreover, a variety of independent factors have been shown to influence teachers' understanding of the objectives and practicality of assessment in classroom studies. These include years of teaching experience, whether the teacher has undergone professional training in assessment, as well as the teacher's age and gender (Bent, Bakx & Den Brok, 2017; Yu & Leung, 2019). Additionally, teachers with more than five years of teaching experience are typically classified as experienced (Housner & Griffey, 1985). As said by Cain, Brindley, Brown, Jones & Riga (2019) while observing a class or learning environment, highly experienced teachers have the capacity to notice crucial indicators, providing the insight and awareness needed to make informed intuitive decisions. Meanwhile less experienced teachers, according to Levstik (2018), perceive the same indicators but are ignorant of their worth. Experience teachers may show high awareness of the assessment practices as compared to less experienced teachers (Nelson, Voithofer, & Cheng, 2019). Thus, experienced teachers have a positive conception of assessment practices.

A study conducted by Mahasneh & Al-Zou'bi (2021), which examined the assessment conceptions of Jordanian science teachers, found notable differences in teachers' perceptions of school accountability based on gender. Additionally, there were significant gender-based discrepancies in the conception of assessment as a means for improving education. However, they found no meaningful differences in perceptions across any of the factors when considering the length of teaching experience. Moreover, subject-wise, the researchers identified noticeable differences in perceptions related to student accountability in assessment. In a related study, In a study of preservice English instructors in Turkey, Yetkin (2018) discovered that the ideas about progress, school accountability, and student accountability were positively correlated. Based on variables like gender, age, or teaching experience, no statistically significant differences in their attitudes were found.

However, Mashhadlou & Izadpanah (2021) discovered that teaching experience did influence language teachers' perceptions of assessments, with much experienced teachers' perceptions of assessments being negative than less experienced teachers' perceptions, with the researcher articulating the distinction using the idea that experienced teachers deemed themselves as being above ought to showcase their teaching significance as well as their teaching effectiveness.

In a separate investigation, Yetkin & Zekiye (2020) undertook a study aiming to elucidate the concepts about assessment held by English teachers in both the pre-service and in-service phases. Their findings indicated that gender and grade level/teaching characteristics exerted a substantial influence on the participants' views of assessment. The research also highlighted a noteworthy gender discrepancy in terms of school accountability, with males assigning it a higher value compared to their female counterparts. Furthermore, significant variances were found between grade levels/teaching groups in relation to school and student accountability.

Contrarily, Unal & Unal (2019) found that seasoned educators place a higher value on assessment than their less experienced counterparts. In comparison to novice teachers, veteran educators have a belief that assessment amplifies student learning, aids in identifying the students' strong suits and areas needing improvement, and offers essential feedback. Further, Unal & Unal (2019) also discovered that these experienced teachers uphold the idea that students bear the responsibility for their own learning (student accountability), as well as teachers and schools being accountable for student learning (school accountability).

Despite of all the findings from the past studies that have shown significant and insignificant differences among the variables, factors including effort, attitude, aptitude, behavior, and prior progress all play a key part in assessing students' learning (Wahono & Chang, 2019). Attitude is important for effort and

performance, and it should be tracked and recorded (Lee, Kuncel & Gau, 2020). However, this assertion does not imply that everything significant in education is necessarily eligible for assessment.

RECOMMENDATIONS

The design of this study does have certain limitations that might influence the outcomes. Initially, the main data collection method in this study involved personally distributing questionnaires to teachers for completion within a week or two. Although this gave participants ample time to contemplate and respond to the questionnaire, it presented an issue as they couldn't easily seek clarification. Consequently, it's uncertain whether teachers completely understood the questionnaire items, potentially compromising the validity of the responses. Moreover, this quantitative study was unable to deliver a comprehensive explanation of why the demographic range of science teachers didn't significantly influence the TCoA level. This may be tied to the sample size, which some could argue was inadequate. Therefore, conducting a larger mixed-methods study focused on exploring TCoA could address this issue and offer a more robust explanation. Furthermore, because the study depended on a single dataset from secondary Science teachers' conceptions of their own assessment practices a follow-up study examining cross-subject disparities in teachers' assessment conceptions and allowing generalization is required. Also, future studies may compare teachers' conceptions of assessment among in-service school teachers as well as preservice teachers.

CONCLUSION

The educational process is made up of a number of interconnected aspects that have an impact on students' progress. One of the most crucial aspects of the educational process is teachers' conceptions of assessment. There is little uncertainty that the education system needs to know what goals it has met, and the only way to do so is through assessment. The results demonstrated a high average score for science teachers' views on assessment being irrelevant, followed by the belief that assessment improves education, student accountability, and lastly, school accountability. Additionally, significant differences were found in science teachers' assessment conceptions based on gender, specifically in the area of school accountability. When considering teachers' years of teaching experience, no significant variations were found in their assessment conceptions regarding school accountability, student accountability, the improvement of education through assessment, or the irrelevance of assessment. Finally, when examined in relation to the subject being taught, notable differences were found in teachers' views on student accountability in assessment. Assessment conceptions differed significantly by subject, with assessment improving education and assessment being irrelevant.

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