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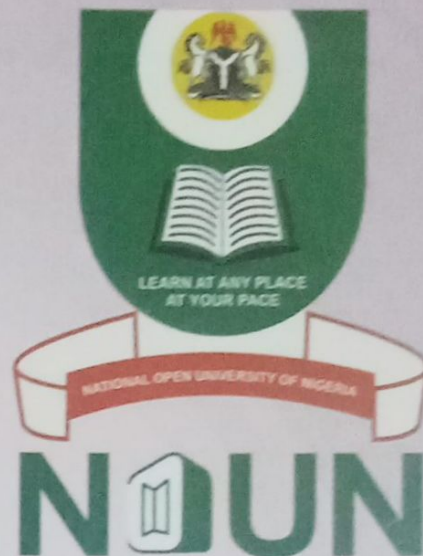
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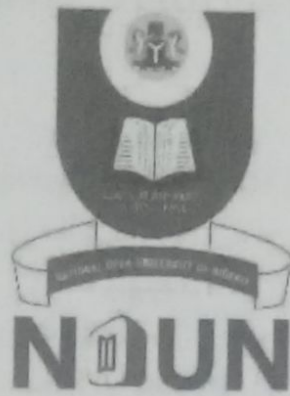
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INFLUENCE OF GENDER AND WORKLOAD CONCERNS ON FORMATIVE ASSESSEMENT CONCEPTION OF BIOLOGY TEACHERS IN SECONDARY SCHOOLS IN ILORIN METROPOLIS

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Abstract

Classroom assessment is pivotal for the development of teaching and learning processes, allowing teachers to draw inferences and make informed adjustments. Teachers' conceptions of assessment significantly influence assessment practices and classroom strategies. Hence, this study examined influence of gender and workload concerns on formative assessment conception of biology teachers in secondary schools in Ilorin metropolis. The instrument for data collection was a self-designed questionnaire which was duly validated by three experts. The reliability of the instrument was determined using Cronbach alpha statistic which yielded mean alpha coefficient of 0.82. Data analysis involves mean scores, t-test, and Pearson Product-Moment Correlation. Findings established that biology teachers' conceptions are positive about the functions of formative assessment in secondary schools in Ilorin Metropolis. In addition, results indicated no significant gender-based differences in conceptions, while a significant relationship exists between workload concerns and formative assessment conceptions, the study recommends that education stakeholders should always conduct awareness campaigns among teachers, students, and parents to highlight the benefits of formative assessment in enhancing teaching and learning. Furthermore, periodically evaluation and adjustment of workload distribution policies to address concerns and maintain a healthy work-life balance for biology teachers.

Keywords: Formative Assessment, Conception, Biology Teachers, Secondary Schools

Introduction

Classroom assessment concentrates on assessment's relevance in the development of teaching and learning processes. Assessment allows teachers and students to make inferences from the data and take appropriate action. Such activities may help to improve teaching and learning or just offer a snapshot of students' competency or success over time (Black & Wiliam, 2018). In the words of Brown (2008), "conceptions of assessment refers to the conceptions people have about assessment, based on their experiences and their understandings of assessment". Teacher's assessment conceptions are crucial because there is convincing evidence that these ideas have a considerable effect on how teachers assess their students' learning and achievements (Vanderyar & Killen, 2007; Brown, 2008; Brown et al., 2009b; Opre, 2015). Furthermore, conceptions may influence teachers' classroom behaviors, such as methods of instruction and motivating strategies (Barnes et al., 2017). Students' opinions concerning assessment are particularly significant, as it is recognized that their views influence and define how they study (Brown & Hirschfeld, 2007; Brown & Harris, 2012).

Azis (2015) developed an approach in which evaluation concepts might be dispersed across a range of objectives. At one end of the spectrum is Assessment for Learning (AfL), also known as formative assessment (Brown & Remesal, 2017) or the pedagogical pole (Remesal, 2007). Assessment in this context is intended to promote student learning while simultaneously providing teachers and students with the knowledge they require to change teaching and learning practices (Black & Williams, 2018).

Vandeyar and Killen (2007) and Brown et al. (2009) argue that teachers' conceptions influence their judgments and professional actions. These scholars think that different assessment concepts result in varied evaluation processes. For example, teachers who view assessment as vital for enhancing teaching and learning would adopt formative techniques of evaluation (Vandeyar & Killen, 2007).

Dixon and Worrell (2016) and Siarova et al. (2017) consider that AfL, or formative assessment, attempts to increase student learning by giving information to teachers and students that could be utilized as feedback to adjust teaching and learning practices. Thus, formative evaluation is rarely rated. It can take two forms: spontaneous—for example, question-and-answer during real-time instruction—or organized, including tasks such as quizzes and homework exercises to assess student progress. Teachers play a critical role in delivering feedback and information on students' performance, but the learner is also a vital part in the assessment process. Teachers frequently employ assessment methods including observations, assignments, feedback sessions, peer tutoring, self-assessment, question-and-answer sessions, comprehensive approaches to teaching and learning, student self- and peer evaluation, and effective feedback. Formative assessment happens within the teaching and learning process. The tools enhance deep learning, critical thinking, student engagement, and the continuity of learning experiences (Dixon & Worrell 2016). Formative assessment is a didactic approach to oversight teaching and learning that emphasizes formative feedback (Black et al., 2009). Good feedback is stringent, detailed, critical, explicit, and aimed at future efforts. Formative evaluation is based on a critical and reliable control of the knowledge learnt and skills developed. In addition, efficient feedback adheres to strict standards based on an observable applicable mastery scale (Williams et al., 2007).

Teachers, students, and parents who do not comprehend the principles and values of formative assessment may place a low value on it. This lack of attention is exacerbated by student and teacher resistance, as well as deeply embedded cultural scripts for teaching and learning that may conflict with formative assessment concepts. Furthermore, some teachers may regard formative assessment as an additional workload, ignoring its importance in improving teaching quality and boosting student growth. Furthermore, Alotaibi (2019) discovered that female teachers were marginally more open to the issues that impede the use of formative assessment than male teachers. Hussain et al. (2019) revealed no statistically significant difference in the mean scores of public and private secondary school teachers' classroom assessment tasks because various research samples and geographical locations might reveal similar or different results. Therefore, there is the need to explore examine formative assessment conception of biology teachers in secondary schools in Ilorin Metropolis

Objectives of the Study

The purpose of the study is to examine influence of gender and workload concerns on formative assessment conception of biology teachers in secondary schools in Ilorin Metropolis. Specifically, the study intends to find out:

- i. The formative assessment conception of male and female biology teachers in secondary schools in Ilorin Metropolis
- ii. The potential workload concerns among biology teachers which influence their conceptions of formative assessment in Ilorin Metropolis

Research Questions

The following research questions were formulated for the study

- i. What is the formative assessment conception of male and female biology teachers in secondary schools in Ilorin Metropolis?
- ii. How does potential workload concern among biology teachers influence their conceptions of formative assessment in secondary schools in Ilorin Metropolis?

Research Hypotheses

H₀₁: There is no significant difference in the formative assessment conception held by male and biology teachers in secondary schools in Ilorin Metropolis.

H₀₂: There is no significant relationship between potential workload concerns among biology teachers and their conceptions of formative assessment in secondary schools in Ilorin Metropolis

Methodology

The study used a survey research design. This design was chosen because it is best suited for data gathering, organization, presentation, and analysis with the goal of explaining the occurrence of an event or phenomena within a certain population. The research included all secondary school biology teachers in the Ilorin Metropolis. The study's population included 579 biology teachers from secondary schools in Ilorin Metropolis who taught biology. The study included a random sample of 185 secondary school biology teachers. The data was collected using a self-designed structure questionnaire that was evaluated by three experts from the Department of Science Education, Faculty of Education, University of Ilorin, Nigeria. The dependability of the research instrument was determined using a test-retest procedure. A reliability test was carried out using twenty (20) questionnaires distributed to twenty (20) biology teachers from secondary schools that were not included in the sample. The reliability of the instrument was determined using Cronbach alpha statistic which yielded mean alpha coefficient of 0.82. This indicates that the instrument is appropriate for the investigation. The researcher physically gave the questionnaire to teachers at selected schools in the Ilorin Metropolis. The rating system was based on a four-point Likert scale: 1 strongly agree (SA), 2 agree (A), 3 disagree (AD), and 4 strongly disagree (SD). The acquired data was graded and analyzed using statistical methods. Data were analyzed using mean scores, standard deviation, the t-test, and Pearson Product-Moment Correlation (PPMC).

Results

Data collected for the study were analyzed and interpreted using presentation tables.

Research Question One: What is the formative assessment conception of male and female biology teachers in secondary schools in Ilorin Metropolis?

Table 1: Mean responses on formative assessment conception of biology teachers in secondary schools in Ilorin Metropolis

S/N	Items	Means		Decision
		Male Response	Female Response	
1	Biology teachers perceives formative assessment as an opportunity to identify and address individual student needs.	2.99	3.01	Agreed
2	Formative assessment makes students learn from mistakes.	3.10	2.78	Agreed
3	Formative assessment allows for continuous improvement.	3.12	2.95	Agreed
4	Formative assessment plays a crucial role in fostering a growth mindset among students.	2.89	3.20	Agreed
5	Formative assessment is a means to inform teacher of their own teaching practices.	2.76	2.88	Agreed
6	Students take an active role in monitoring and reflecting on their own learning progress through formative assessment.	3.01	2.69	Agreed
7	Formative assessment is a dynamic process that goes beyond traditional testing	2.99	3.11	Agreed
8	Formative assessment is incorporating diverse strategies such as questioning techniques, peer assessments, and classroom discussions	2.77	3.03	Agreed
9	Formative assessment not only as a means of gauging student knowledge	3.51	2.93	Agreed
10	Formative assessment is a valuable tool for providing timely feedback to guide instructional decisions	3.14	2.81	Agreed
Grand Mean		3.03	2.94	

Table 1 showed the mean responses on the current conceptions of formative assessment held by biology teachers in secondary schools. The results indicate a generally positive acceptance of the listed conceptions, as evidenced by mean scores above 2.50. The mean scores range from 2.69 to 3.51, suggesting a favorable conception among biology teachers regarding the role and importance of formative assessment.

Research Question Two: How do potential workload concerns among biology teachers influence conceptions of formative assessment in secondary schools in Ilorin Metropolis?

Table 2: Mean responses on potential workload concerns among biology teachers influence their conceptions of formative assessment in secondary schools

SN	Items	Mean	Decision
1	Heavy teaching loads often lead biology teachers to prioritize time-efficient instructional methods	3.11	Agreed
2	Increased administrative duties and paperwork limit the time and energy that biology teachers can allocate to thoughtful planning and implementation of formative assessment strategies in their classrooms.	2.81	Agreed
3	Overloaded schedules result in limited opportunities for professional development, hindering biology teachers from staying updated on innovative formative assessment techniques and best practices.	2.79	Agreed
4	High workload demands encourage biology teachers to rely on traditional assessment methods at the expense of more formative and student-centered approaches that require additional time and effort.	2.84	Agreed
5	Scarcity of resources, including time lead to a preference for simpler formative assessment methods, potentially overlooking the richness and diversity of strategies that could enhance student learning experiences.	3.15	Agreed
6	Pressure to cover extensive curriculum content within a limited timeframe influence biology teachers to perceive formative assessment as an additional burden rather than an integral part of effective teaching.	3.41	Agreed
7	Limited time for collaboration with colleagues hinder the sharing of ideas and collaborative efforts to implement more comprehensive and effective formative assessment practices in biology classrooms.	2.78	Agreed
8	Workload concerns contribute to a lack of consistency in the application of formative assessment across different biology classrooms, potentially resulting in variations in the quality and depth of student learning experiences	2.99	Agreed
	Grand Mean	2.99	

Table 2 showed the mean responses on the potential workload influence their biology teachers' conceptions of formative assessment in secondary schools in Ilorin Metropolis. The results indicate a generally positive acceptance of the influence of potential workload on biology teachers' conceptions of formative assessment, as evidenced by weighted mean of 2.99 which is above the average mean score of 2.50. The mean scores range from 2.78 to 3.41.

Hypotheses Testing

Hypothesis One: There is no significant difference in the formative assessment conception held by male and biology teachers in secondary schools in Ilorin Metropolis.

Table 3: t-test Analysis of current conceptions of formative assessment held by biology teachers in secondary schools based on Gender.

Gender	N	Mean	Std.	t	Sig.	Remarks
Male	103	3.22	.86	0.035	0.83	Not Significant
Female	82	3.13	.94			

Table 3 shows significance value of 0.83 which is greater than 0.05 and this implies that no significant difference in the current conceptions of formative assessment held by biology teachers in secondary schools in Ilorin Metropolis based on gender. Hence, the null hypothesis is retained.

Hypothesis Two: There is no significant relationship between potential workload concerns among biology teachers and their conceptions of formative assessment in secondary schools in Ilorin Metropolis

Table 4: Pearson Product Moment Correlation on relationship between potential workload concerns among biology teachers and their conceptions of formative assessment in secondary schools in Ilorin Metropolis

Variables	Mean	Std. Dev	N	p-value
Potential workload concerns	3.07	1.16	185	.000
Conceptions of formative assessment	2.58	1.68	185	

The result of PPMC used to test null hypothesis one revealed the mean scores of 3.07 and 2.58 for potential workload concerns and conceptions of formative assessment with standard deviations of 1.16 and 1.68 respectively. From the analysis, the r-cal value was found to be greater than r-crit ($0.161 < 0.195$). The p-value of .000 obtained was less than 0.05 level of significance. The result therefore shows that significant relationship exists between the two variables. The null hypothesis was retained.

Discussion

The findings of the study revealed that formative assessment conception of biology teachers in secondary schools is positive. This may be due to that Biology teachers made this formative assessment importantly. This is in agreement with Lock and Munby (2000) observed changing assessment practices in the classroom, the finding indicated that teachers who discovered that their teaching attempt is matched with the concepts of formative assessment are more willing to undertake it.

Finding of the study revealed overall positive reception of biology teachers' conceptions in secondary schools. This may be due to that an indicative of an understanding among biology teachers' formative assessment is a dynamic and valuable tool for enhancing student learning experiences. This finding is in line with Dixson and Worrell (2016) who observed formative and summative assessment in the classroom and assessment practices for 21st century learning respectively consider that formative assessment, aims to increase students' learning by offering information to teachers and students for use as feedback to adjust teaching and learning. This may be due to that classroom assessment researchers, certain important demographic factors influence teachers' views on obstacles to implementing formative assessment in their classrooms.

The findings establish a consistent agreement among biology teachers on the impact of heavy teaching loads, administrative duties, overloaded schedules, and other workload-related factors. This may be due to that the biology teachers always willing to attended to the Students' needs in the formative assessment. This is in line with Alotaibi (2019) who observed teachers' perception of factors that influence the adoption of the formative assessment and the results shows that class size, workload, and availability of assessment tools are impediments to teachers' practice of formative assessment in the classroom.

Conclusion

The findings align with the literature on formative assessment and its importance in enhancing student learning experiences. Positive conceptions among teachers indicate an

understanding of formative assessment as a valuable tool for improving teaching and learning. Additionally, the influence of workload concerns highlights the challenges teachers face in implementing formative assessment practices, which may impact the quality and depth of students learning experiences.

Recommendations

Based on the findings of the study, the following recommendations are made;

1. Ongoing professional development programs focusing on formative assessment strategies and their benefits should be implemented. This will ensure both male and female teachers to have a robust understanding and are equipped with effective methods to integrate formative assessment into their teaching practices.
2. Administrative burdens on teachers should be reduced to free up time for the thoughtful planning and implementation of formative assessments. This could involve streamlining paperwork and reducing non-teaching duties.

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