REWARD SYSTEM AS DETERMINANTS OF BIOLOGY TEACHERS' PERFORMANCE IN SECONDARY SCHOOLS IN ONDO STATE

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Abstract
This study examined the reward system as a determinant of Biology teachers' performance in secondary schools in Ondo State, Nigeria. Recognizing the crucial role of motivation in employee productivity, the study highlights the need for a structured reward program to enhance teachers' performance. The study specifically investigated the distribution of teachers based on teaching experience in selected public secondary schools and examined the influence of teachers' years of experience on students' performance. A descriptive survey research design was adopted, and 200 questionnaires were randomly distributed across ten (10) sampled public schools. The collected data were analyzed using simple regression analysis. Findings revealed a significant relationship between the reward system and employee performance, emphasizing the importance of incentives in motivating teachers. Additionally, a significant relationship was found between working conditions and Biology teachers' performance, highlighting the impact of employment benefits and workplace conditions on instructional effectiveness. Based on these findings, it is recommended that stakeholders in the education sector establish a standardized framework to harmonize teachers' entitlements, fringe benefits, and incentives, ensuring parity with other professions. Furthermore, the government should provide adequate teaching materials and infrastructural facilities to enhance teachers' effectiveness and improve student learning outcomes.

Keywords: biology, motivation, reward system, teachers' performance
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Introduction

Science has established itself as one of the most profound and influential fields of human endeavour. Its diverse branches investigate nearly every observable or detectable phenomenon, shaping our understanding of the universe, our planet, ourselves, and other living organisms (Ogunleye and Adepeju, 2011). As an integral component of human culture, science forms the foundation for modern technological advancements and serves as the cornerstone of sustainable national development, protecting societies from ignorance, illiteracy, disease, and poverty (Fatoba, Akinnodi, Adeleye, and Olofin, 2020). Consequently, science education is a critical tool for the scientific and technological advancement of any nation. This principle is enshrined in the National Policy on Education of the Federal Republic of Nigeria (FRN, 2014), which emphasizes that science education should, among other objectives, equip students to thrive in the modern age of science and technology. The policy further highlights that teaching and learning science is essential for imparting the necessary scientific knowledge, skills, and competencies.

Biology, Chemistry, and Physics are central to the sciences, preparing learners for professional careers in fields such as medicine, biotechnology, agriculture, and pharmacy. This underscores the importance of science subjects for higher education in nearly all science-related professions, including Medicine, Pharmacy, Agriculture, Engineering, and Food and Nutrition. Therefore, a proper understanding of scientific concepts is of paramount importance (Adaramola and Obomanu, 2011). Knowledge of science

subjects has significantly improved the quality of life, driven economic growth, and transformed societies. For nations aspiring to achieve rapid technological development, academic excellence in core science subjects is crucial.

Biology as a critical science subject is a prerequisite for admission into science and technology-related courses in higher institutions. Poor understanding, academic performance, and retention of Biology concepts can negatively impact students' interest in pursuing Biology-related fields (Ihejiamaizu and Nyenke, 2020). In a Biology classroom, teachers should employ learner-centred and constructivist teaching techniques to encourage active student participation in the learning process. Effective teachers strive to identify the types of information and lesson presentations that align with students' learning styles and preferences, thereby facilitating better comprehension of the concepts being taught. Classroom teachers utilize specialized professional knowledge to organize, manage, explain, demonstrate, and deliver lessons effectively to their students.

The Federal Ministry of Education (2013) outlined the objectives of teaching Biology in secondary schools, which include: Fostering the comprehension of the structure and function of living organisms as well as cultivating an appreciation for nature; acquiring appropriate field and laboratory training; Enabling students to conduct and evaluate biological experiments and projects; Develop important scientific skills such as observation, classification, analysis, and interpretation of biological data; acquire vast comprehensive understanding of biological concepts for further studies; possess scientific orientation to solve biological problems and develop ability to applying biological principles to issues affecting individuals, communities, environmental health, and socioeconomic well-being.

Despite these objectives, reviews of senior secondary school Biology results in external examinations, particularly in Ondo State, reveal disappointing outcomes despite the efforts of teachers. Between 2018 and 2024, approximately 9.17 million out of 11.9 million candidates who took the Unified Tertiary Matriculation Examination (UTME) conducted by the Joint Admissions and Matriculation Board (JAMB) scored below the 200-pass mark. Performance in science subjects, especially Biology, was particularly poor, with an average failure rate of 78.29% over seven years. As of April 29, 2024, out of 1,842,464 results, 1,402,490 candidates scored below 200. Similarly, results from the West African Senior School Certificate (WASC) examinations were equally discouraging.

Teachers play a pivotal role in influencing student learning. They act as intermediaries in the transmission of knowledge, values, and skills. Therefore, if a teacher is ineffective, students under their guidance are likely to make inadequate academic progress, regardless of their potential. This underscores the critical importance of effective teaching in the learning process.

In organizational contexts, administrations provide rewards to employees in the form of wages, salaries, promotions, long-service awards, certificates, end-of-year bonuses, and other fringe benefits. These rewards are designed to motivate behaviours that align with organizational goals. Key questions arise: What behaviours do organizations seek to encourage? How can reward systems foster such behaviours? What drives organizations to design reward packages for employees? Nearly all organizations invest in rewards to motivate employees and achieve desired outcomes. According to equity theory, the effectiveness of these rewards largely depends on how employees perceive the value of their inputs—such as education, experience, training, time, and effort—relative to the outcomes they receive, including pay, promotions, recognition, and praise (Bello and Adebajo, 2014). In the context of education, schools require teachers

who are motivated to work diligently toward improving academic performance, particularly in subjects like Biology in Ondo State.

Armstrong (2001) defined a reward system as an organization's integrated framework of policies, processes, and practices designed to compensate employees based on their contributions, skills, competencies, and market value. This system is developed within the context of the organization's reward philosophy, strategies, and policies, encompassing processes, practices, structures, and procedures that ensure the provision and maintenance of appropriate levels of pay, benefits, and other forms of rewards. Similarly, Obisi (2005) described a reward system as a form of recognition or prize given to employees to incentivize and enhance their performance. Bello and Adebajo (2014) further elaborated that a reward system involves the development and implementation of strategies, policies, and systems aimed at helping organizations achieve their objectives by attracting, retaining, and motivating the necessary workforce while fostering their commitment.

Johnson, Houmanfar, and Smith (2010) outlined the primary goals of a reward system, which include: attracting, retaining, and motivating employees, supporting the achievement of the organization's strategic and short-term objectives by ensuring a skilled, competent, and motivated workforce, meeting employees' expectations of fair, equitable, and consistent treatment about their work and contributions. Neckermann and Kosfeld (2008) distinguished between two basic types of rewards. The intrinsic rewards are internally driven and related to personal satisfaction and the extrinsic rewards, are external and include tangible benefits such as pay and promotions.

Several theories have been proposed to study the relationship between reward systems and employee performance, including the equity theory of motivation and work compensation, and the equal pay for equal work theory. For this study, the equity theory will serve as the framework. First introduced by Adams (Ogundele, 2006), the equity theory emphasizes the importance of justice and fairness in reward systems. According to the equity theory, employees' motivation is influenced by their perception of being treated fairly and equitably. If individuals feel they are being treated unfairly, they are likely to engage in actions aimed at restoring a sense of equity (Onabanjo, 2004). Ogundele (2006) identified two key components of the equity theory including the factors that influence individuals' perceptions of equitable treatment and the actions individuals may take to restore equity when they feel unfairly treated. However, the drawback of equity theory as opined by Fajana (2002) is a perceived injustice that arises when an individual compares the ratio of their rewards to their input (effort) with that of a comparable person and finds them unequal. This inequity among staff can lead to tension and uneven staff contributions, while employees who feel denied justice at work may increasingly resort to arbitration or legal action to address grievances.

Statement of the Problem

The consistent average performance of students in Biology during the May/June West African Senior School Certificate Examination (WASSCE) in Ondo State has recently revealed a deeply concerning trend. This situation is particularly disheartening given that a majority of the students who took Biology did not perform as expected, with results failing to reflect the efforts invested by their teachers, this period of training may represent their final formal exposure to science, making their performance even more critical. To produce students who are proficient in Biology, teachers must go the extra mile to impart knowledge effectively, ensuring students achieve conceptual understanding. This requires the use of metacognitive

teaching strategies and maintaining student focus during lessons. However, for teachers to commit to these efforts, they must be highly motivated.

Unfortunately, teacher motivation for efficient performance within the educational system has not received the attention it deserves, despite the pivotal role teachers play in the classroom and the broader goal of achieving excellence in education. This issue has become a significant problem, particularly in Sub-Saharan Africa, where the teaching profession has reached an "intolerable low point." The societal perception of teachers, including their purchasing power, social status, and gender biases, has rendered the profession unattractive. For instance, in many Nigerian states, teachers have gone without salaries for several months, forcing them to seek alternative means of livelihood to meet their basic needs. This dire situation has further demoralized educators and undermined their ability to perform effectively.

Achieving success in the Senior Secondary School Certificate Examination (SSSCE) and the National Examination Council (NECO) in Biology requires intensified efforts in teaching the subject, both for internal and external examinations. However, inconsistent government policies, such as the non-payment of teachers' allowances, embezzlement of pension funds, and the exclusion of teachers from long-service award programmes, have been identified as key factors contributing to poor teacher performance. These systemic issues have created a challenging environment for educators, directly impacting their ability to deliver quality education. These challenges have collectively contributed to a decline in teacher morale and effectiveness, ultimately reflecting the subpar academic performance of students in Biology and other subjects. Addressing these issues is crucial to improving both teacher motivation and student outcomes in the educational system.

Research Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance.

Ho1: There is no significant relationship between the reward system and biology teachers' performance.
Ho2: There is no significant effect of job allowance affecting teachers' performance in teaching biology.
Ho3: There is no relationship between working conditions and biology teachers' performance

Methodology

This study employed a descriptive survey research design to establish a relationship between the reward system and biology teachers' job performance. The target population comprised all biology teachers in public secondary schools within Ondo Central Senatorial District. Using a simple random sampling technique, the study selected 20 teachers from each of 10 public secondary schools, resulting in a total sample size of 200 teachers. Data collection was conducted using a self-developed questionnaire, which was designed to align with the research objectives. The questionnaire employed a four-point Likert scale (Strongly Agree, Agree, Strongly Disagree, Disagree) for respondents' assessments. To ensure content validity, the draft questionnaire was reviewed by experts in biology education, and measurement and evaluation, who provided feedback for refinement. The reliability of the instrument was established through a test-retest method, where a pilot study was conducted, and responses were analyzed. The Pearson Product-Moment Correlation Coefficient ($r = 0.82$) confirmed the instrument's reliability. Data analysis was carried out using inferential statistics. Three hypotheses were formulated and tested at a 95% confidence level.

Results

Hypotheses Testing

Ho1: There is no significant relationship between the reward system and biology teachers' performance.

Table 4: *Relationship between reward system and biology teachers' performance.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.569 a	.323	.318	5.234	.253

* a. Predictors: (Constant), ER, b. Dependent Variable: EP

The results presented in Table 1 indicate a significant relationship between the independent variable and the dependent variable. The regression analysis confirms that teachers' salary packages have a measurable impact on teachers' performance, as demonstrated by an R-value of 0.569. Furthermore, the coefficient of determination (R^2) is 0.323, signifying that 32.3% of the variance in teachers' performance can be attributed to the salary package. Based on these findings, Hypothesis 1 which posits that there is a significant relationship between the reward system and biology teachers' performance is supported.

Ho2: There is no significant effect of job allowance affecting teachers' performance in teaching biology.

Table 5: *Effect of job allowance on teachers' performance in teaching biology.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.529[a]	.279	.273	3.135	.217

* a. Predictors: (Constant), PTP, b. Dependent Variable: EP

Table 2 provides an insight into the relationship between the observed and predicted values of the dependent variable (Biology Teachers' Performance: EP). The multiple correlation coefficient (R) is 0.529, indicating a moderately strong relationship among the variables. However, the explanatory power of the regression model is relatively low, as the coefficient of determination (R^2) is 0.279. This suggests that only 27.9% of the variation in Biology teachers' performance is accounted for by the model, implying a poor model fit based on data from teachers in selected public secondary schools in Ondo Senatorial District. Furthermore, R^2 tends to overestimate the model's fit to the population, reinforcing the need for cautious interpretation. The adjusted R^2 value of 0.273 further confirms that the model explains a limited portion of the variance. Despite these limitations, the model remains somewhat acceptable within the context of sampling theory, which posits that larger sample sizes yield more accurate results. In this study, the sample consisted of 56 respondents, and while the model's predictive power is limited, it still provides useful insights within its scope.

Ho3: There is no relationship between working conditions and biology teachers' performance

Table 6: *Relationship between working conditions and Biology Teacher's performance.*

		EI	EP
GAB	Pearson Correlation	1	.419
	Sig. (2-tailed)		.106
	N	200	200
EP	Pearson Correlation	.419	1
	Sig. (2-tailed)	.106	
	N	200	200

Table 3 presents the relationship between Biology teachers' performance (EP) and working conditions. The Pearson correlation coefficient, which assumes normal data distribution, measures the strength and direction of the linear association between these variables. The correlation coefficient for Biology teachers' performance and working conditions is 0.419, indicating a positive but weak relationship since the value is relatively distant from 1. As expected, the correlation coefficients along the main diagonal are 1.0, reflecting a perfect positive linear relationship of each variable with itself. The significance level (p-value) associated with this correlation is 0.106, suggesting that the relationship is not statistically significant. This implies that while an association exists between working conditions and Biology teachers' performance, the correlation is weak and may not be reliably predictive. In practical terms, an improvement in working conditions may influence teacher performance, but the extent and consistency of this impact remain uncertain.

Discussion of Findings

This study examined the predictive role of the reward system in determining the performance of Biology teachers in secondary schools in Ondo State, Nigeria. Hypothesis one shows a significant relationship was found between the reward system and employee performance. This finding aligns with the study by Akuoko and Donker (2012), which highlighted various government-initiated incentive packages—such as free accommodation, car loans, maintenance allowances, and best teacher awards—as measures to address reward system challenges for Nigerian teachers. Hypothesis two revealed that Job allowances were found to have a significant effect on teachers' performance. The introduction of allowances such as meal allowances and motivation incentives by the Nigerian government aimed to mitigate the economic hardships faced by teachers. However, irregular payment or denial of these allowances negatively impacted their performance in the workplace, while Hypothesis three shows that a significant relationship was identified between working conditions and Biology teachers' performance. The study revealed that inadequate or inconsistent provision of good working conditions—including timely promotions, long-service awards, retirement benefits, pension schemes, gratuities, and employee loan assistance—adversely affected teachers' performance in secondary schools. Overall, the study underscores the importance of a well-structured reward system in enhancing teachers' productivity and job satisfaction in Nigerian secondary schools.

Conclusion

The significance of rewards in the daily performance of Biology teachers cannot be overstated, particularly when teachers are recognized and compensated for their efforts. It is a well-established fact that human performance, regardless of the field, is enhanced through increased motivation. This study demonstrates that a well-structured reward system plays a crucial role in fostering teachers' job satisfaction and should be a shared priority for both employers and employees. Findings from the study's hypotheses indicate that teachers place great value on the various forms of rewards provided by their employers. Effective teaching requires active student engagement in learning and comprehension of instructional content. When teachers are adequately motivated through rewards, their efforts can have a reciprocal effect on student performance, leading to improved understanding and better outcomes in both internal and external examinations.

Conversely, when rewards are inadequate or withheld, teachers often express dissatisfaction through diminished commitment and reduced performance in teaching Biology. Therefore, educational institutions and policymakers must consider the needs and concerns of teachers to maintain industrial harmony, as a well-motivated workforce is essential for productivity. To ensure sustained motivation and high performance among Biology teachers, it is imperative to establish a structured reward program that recognizes their contributions. Many students perceive Biology as a challenging subject, which hinders their aspirations in science-related fields such as medicine, pharmacy, and nursing. Thus, enhancing teacher efficacy and adopting effective teaching strategies can significantly improve students' understanding and success in Biology.

Recommendation

Based on the findings of this study, the following recommendations are made:

1. Relevant stakeholders in the education sector should establish a unified framework to harmonize all entitlements, fringe benefits, and incentives for teachers, ensuring parity with their counterparts in other professions.
2. As teaching is often regarded as the "mother of all professions," teachers should receive above-average treatment, social recognition, and respect to reflect their critical role in nation-building.
3. The government should enforce strict professionalism in Biology education by ensuring that only registered and qualified teachers are allowed to practice, thereby upholding teaching standards and instructional quality.
4. The conditions of service for teachers should be made attractive enough to encourage skilled professionals from other fields to consider and remain in the teaching profession with pride and commitment.
5. Teachers should be granted access to financial support such as car loans, housing loans, health insurance schemes, and international exposure through educational exchange programs. Such initiatives will provide teachers with global perspectives and improve their teaching effectiveness.
6. Governments at aLl levels should ensure the adequate provision of teaching materials, laboratory equipment, and infrastructural facilities for Biology education to enhance teacher performance and student learning outcomes.

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