



## **Working Environment and Teachers' Productivity in Secondary Schools in Port-Harcourt Metropolis**

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### **ABSTRACT**

This study centred on Working Environment and Teachers' Productivity in Secondary Schools in Port-Harcourt Metropolis. Thus, three research questions and three hypotheses were drawn for the study. The population of the study consists of 22 (principals) 440 (teachers) from 22 senior secondary schools in Port-Harcourt metropolis, Rivers State. The sample size consists of 462 respondents. The researcher adopted a purposive sampling technique. The instrument was questionnaire titled; working environment and teachers' productivity questionnaire (WETPQ). A likert type scale was used and the respondents select one of the four (4) options: Strongly Agree (SA) Agree (A) Disagreed (D) and Strongly Disagree (SD). Test-retest method was used for the reliability of the instrument. The instrument was administered to Twenty (20) respondents outside the sample area of the study. The first and second scores were analyzed using the Pearson Product Moment Correlation Coefficient which resulted to 0.78. Findings indicated that adequate lightening, temperature and space availability significantly influence productivity of the teachers. Based on the findings of the study, it was concluded that adequate lightening in the learning environment, moderate temperature provides comfort and relaxation of the teachers, spacious offices and classrooms creates opportunity for special learning activities hence reducing the risk of distraction. It was recommended that the temperature of the working environment be made moderate through the use of air condition that can be controlled based on the capacity needed by the individual. The classroom or offices should be spacious enough to enhance adequate learning and teaching activities.

**Keywords:** Classroom, productivity, Teachers, working environment

### **INTRODUCTION**

Teachers are influenced by certain activities around their working environment. In a common parlance, working environment is identified as the place that one works. According to business dictionary, working environment refers to all existing circumstance affecting labor in the work place, including job hours, physical aspects, legal rights and responsibility, temperature, available space, organizational climate and workload. It is the social and professional environment in which teachers interact with students, principals and other stakeholders in the same environment.

A decent working environment is a condition where individuals can do their jobs in an ideal, secure, healthy, and comfort way. Therefore, many studies classify the work environment into toxic and conducive environments (Akinyele, 2010). Unhealthy and unsafe work environment in terms of poor ventilation, immoderate noise, inadequate lighting etc. affect employees' productivity and health.

Working environment is created by the interaction of employees with their organizational climate, and includes psychological as well as physical working conditions (Gerber 1998). Hay Group (2007) contends that work environment includes a friendly, well-designed, safe physical space, good equipment and effective communication which will improve productivity. Well-designed and organized offices and work areas make significant differences to how people feel about their work. Working environment gives messages about how much the organization value teachers and the standards it expects from the teachers for the realization of the expected productivity (Armstrong & Murlis, 2007).

For Humphries (2005) some of the factors that influence the workplace include: cleanliness, water, lighting, colouring, security and music. Many work environment studies have shown that workers are satisfied with reference to specific work environment features (Chandrasekar (2011). Those features

include: ventilation rates, lighting, and access to natural light and acoustic environment. These features preferred by users significantly contribute to their workspace satisfaction and productivity.

For Rolloos (1997) productivity is a ratio to measure how well an organization (individual, industry or country) converts input resources (labor, materials, machines etc.) into goods and services. In addition, productivity refers to effort to produce with the least effort by combination of labor, material and machines. The working conditions are very important to the organization. If the employees have negative perception of their working conditions, they are likely to be absent, have stress related illness, and their productivity and commitment tend to be low. In the same vein, Mali (1978) sees productivity as the measure of how resources are brought together in organizations and utilized for accomplishing a set of results. This implies that it reflects on reaching the highest level of performance with least expenditure of resources.

As revealed by Purcell, Kinnie, Hutchinson, Rayton and Swart (2003) evidence shows that productivity depended on having the right mix of the skills, abilities, motivation and potentialities in achieving the predetermined goal of the institutions. An enabling environment for collaborative building of teachers' capacity is therefore very critical. This is because the more skillful the teachers are, the higher their level of productivity. Skilled labor not only can do things beyond the competence of unskilled labor, it is likely also to be able to work faster, with less supervision, fewer errors as well as producing goods and services of a higher substance and quality. This view is accepted by Adelokun (2011) who affirms that teachers with a good learning environment developed more confident and feel less at risk, while at the same time acquiring motivation for entrepreneurial activity. A satisfied, happy and hardworking teacher is the biggest asset of any organization. For instance, the level of salary, promotion, appraisal system, climate management, and relation with co-workers are the very important factors. Creating better and higher performing workplace requires an awareness of how workplace impacts behavior and how behavior itself drives workplace productivity (Armstrong & Murlis, 2007).

Management's new challenge is to form an environment that attracts, retain and motivate teachers. The responsibility lies with managers and supervisors at all levels of the organization. They have to create a working environment where people enjoy what they do, feel like they have a purpose, have pride in what they do and can reach their potential. The work environment affects teachers' morale, productivity and engagement- both positively and negatively. In an effort to motivate workers, firms have put into practice a number of activities such as performance based pay, employee involvement, recruiting agreements, practices to help balance work and family life as well as various forms of information sharing (Chandraseker, 2011).

According to Abdulla et al. (2010), environmental factors represent the immediate job environment that contains skills required to perform a job, authority, autonomy, relationship with supervisors and co-workers and other working conditions. It is important for the employer to know how its work environment impacts greatly on the employee's level of motivation and productivity. A well designed office signals the values and objectives of the organization and the use of design in office interior communicates an organization values and identity.

### **Statement of the Problem**

An attractive and supportive work environment can be described as an environment that attracts teachers, encourages workforce capacity as well as performing effectively. The purpose of providing attractive work environments is to create incentives. In addition, supportive work environments provide conditions that enable teachers to perform effectively, making best use of their knowledge, skills and competences and the available resources in order to provide high-quality services. In spite of the government and management of the school board to enhance efficiency among the teachers, there are still the challenges of insufficient of lightening, inability to put measure to ensure favorable temperate devoid of extreme cool or hot as well as overcrowding teaching and learning without enough space for special learning activities hence affecting the capacity of the teachers to performance their task adequately. This therefore informs the researchers to investigate working environment and teachers' productivity in secondary schools in Obio/Akpor local government area.

### **Purpose of the Study**

The purpose of the study was to examine effects of working environment on teachers' productivity in Port-Harcourt metropolis, Rivers State. Specifically, the objectives were to:

1. Examine how lightening within the learning environment affects productivity of the teachers.

2. Determine how temperature of the learning environment affects productivity of teachers.
3. Determine how space availability for learning affects teachers' productivity.

#### **Research Questions**

1. How does lightening within the learning environment affect productivity of the teachers?
2. How does temperature of the learning environment affect productivity of teachers?
3. How does space availability for learning affects teachers' productivity?

#### **Hypotheses**

1. There is no significant difference in the opinions of principals and teachers on how lightening within the learning environment affect productivity of the teachers.
2. There is no significant difference in the opinions of principals and teachers on how temperature of the learning environment affects productivity of teachers.
3. There is no significant difference in the opinions of principals and teachers on how space availability for learning affects teachers' productivity.

#### **Significance of the Study**

The study will reveal the fundamental advantages of using adequate lightening for teaching and learning. In other words, inconvenient lighting is a source of distress, thus leading to poor job performance. That happens when the teachers are exposed to uncomfortable working environment in which there is a high glare, or dim bulk, or a lack of natural light in the office. The brightness of office light influences concentration, alertness, and task performance.

The study will also discuss the needs for adequate or moderate temperature of the working environment in order to enhance the capacity of the teachers and students. Good room temperature increases productivity and reduces stress in workers as it plays notable role in workplace environment. High temperatures affect employee's performance, particularly duties required on cognitive, physical, and perceptual duties.

More so, the study will be of benefit to the education scholars, students, teachers, principals and other stakeholders who will likely research into similar topic all over the higher institutions in Nigeria.

The study will be of help to school management who has the responsibility of providing the related facilities for the comfort of the teachers, students and principals. This is obvious as productivity of the teachers cannot be generated in the situation of distress and inconvenience.

This study will add to the volume of literatures on working environment and teachers' productivity in secondary schools in Rivers State.

#### **Scope of the Study**

The study was limited to working environment and teachers' productivity in secondary schools in port Harcourt metropolis, Rivers State. It covered certain variable such as: availability of lightening, temperature conditions and space availability and teachers' productivity.

#### **Literature Review**

This study was guided by competency theory developed Chomsky, (2010). For this scholar competency theory reflects on combination of knowledge, skills, abilities formed in the process of learning of a particular discipline, as well as the ability to perform any activity on the basis of the acquired knowledge, skills and abilities. Competence theory thus captures skills and properties located outside of cognitive. In other words, competence is achievable through certain elements like comfort and satisfaction derived from the work environment. This is because it largely behavioral as opposed to personality and intelligence. This means that working environment endowed with the necessary facilities that influence or motivate learning can equally infuse certain quality and expectations from the actual attitude of the teachers.

For Azimov and Shchukin (2009) competence theory relates to the activity that propel knowledge and willingness, ability to perform the tasks, solve problems and evaluate the results consistently and independently in accordance with the objectives. This scholar more so argued that the system must therefore provide the necessary facilities that will stimulate individuals to demonstrative the inherent potentialities.

The implication of this theory to the study was that necessary facilities need to be provided or made available for the effective delivery of services. In other words, when there is provision of adequate classrooms or office spaces, adequate light, teachers working under modern temperature or wealth condition, less noise environment and decent environment eventually lead to productivity of the

teachers. Thus, the school management and government need to make these facilities favorable for the comfort of the teachers and students.

### **Concept of Work Environment**

Yusuf and Metiboba, (2012) defined workplace environment as composition of three major sub-environments which include the technical environment, the human environment and the organisational environment. According to them technical environment refers to tools, equipment, technological infrastructure and other physical or technical elements of the workplace. The human environment includes the peers, others with whom employees relate, team and work groups, interactional issues, the leadership and management (p.37). The human environment can be interpreted as the network of formal and informal interaction among colleagues; teams as well as boss-subordinate relationship that exist within the framework of organizations. Such interaction (especially the informal interaction), presumably, provides avenue for dissemination of information and knowledge as well as cross-fertilization of ideas among employees. The third type of work environment, organisational environment includes systems, procedures, practices, values and philosophies which operate under the control of management.

In the words of Akintayo (2012) work environment refers to the immediate task environment where an organization draws its inputs, processes it and returns the outputs in form of products or services for public consumption. Several factors of workplace environment may leads to the level of teachers' performance and one of them is job satisfaction (Arman, Mastura, Shardy & Samsiah, 2008). It plays a crucial role since performance of an individual is reciprocal with the amount of satisfaction derives from his or her work.

### **Lightening and Teachers' Productivity**

Light is universally understood as essential to the human condition. Yet light quality varies substantially in nature and in controlled environments leading to questions of which artificial light characteristics facilitate maximum learning. The amount of light needed in the workplace depends on the kind of tasks being performed, either outdoors or indoors, or when they are performed, in the day, or at night. As a consequence, it will either increase or decrease the performance. Inconvenient lighting is a source of distress, thus leading to poor job performance. That happens when the teachers are exposed to uncomfortable working environment in which there is a high glare, or dim bulk, or a lack of natural light in the office. The brightness of office light influences concentration, alertness, and task performance (Sehgal, 2012).

Recent studies by Zemba (2003) have proven that there is a correlation between lighting and humans' performance and health. The studies seem to show that windows and daylight can enhance students' physical and psychological health, influence their mood, behavior and learning .Light does not only provide visual information but also constitutes a powerful modulator of our circadian rhythm and many non-visual functions including the state of alertness, mental focus, and cognitive performance. Circadian rhythm in humans is responsible for many cognitive processes such as attention, executive functions and also memory.

### **Temperature and Teachers' Productivity**

Good room temperature increases productivity and reduces stress in workers as it plays notable role in workplace environment. Effective temperature indicates how hot or cold our environment really makes us feel (Aamodt, 2004). High temperatures can affect employee's performance, particularly duties required on cognitive, physical, and perceptual duties. (Badayai, 2012).Also, the physical condition is an important factor to generate output of the teachers in the secondary school system. Offices and factories that are too hot and ill ventilated are debilitating to effort. In other words, supply of good protective clothing, drinking water, rest rooms, toilets, first aids facilities will contribute to active performance in this regards etc.

Similar experiences showed that temperature or climate change emanating from windstorms and rainstorms have significant relationship with teaching and learning in the secondary schools. This outcome may be explained from the perspective that windstorms and rainstorms are accompanied by violent winds; thunder and lightning that can blow away roof tops of buildings and destroy other

school property, and so render classroom teaching, learning productivity and administrative responsibilities redundant (Edo and Osuji, 2016).

Teachers are constantly exposed to the influence of atmospheric changes whether indoors or outdoors which have profound impact on the physiological functioning of his body. The term thermal stressor has thus been used to describe the way human body (with a constant temperature of 37°C) adjusts to changes in atmospheric temperature which often leads to stress. Extreme temperatures, whether hot or cold have implications for both teaching and learning outcomes.

Chandrasekar (2011) stated that high temperatures can have a direct impact on health and lead to heat stress and heat exhaustion. A research by this scholar indicated severe cold or hot room temperatures affect teachers performance as the brain will be constantly reminding the body to respond appropriately until the required temperature is achieved. This situation likely affects learning and learning outcomes. This is because learning and memory require attention.

Teachers' comfort and health are affected more by temperature than any other element of the physical environment. Elements of temperature that affect physiological function of the teachers include radiation (sunshine), temperature, relative humidity and atmospheric pressure. A related experiment by Pilman (2001) has established that temperature at 64°F and 80°F has significant negative effect on memory while temperature at 72°F showed no such effects. This indicates that the latter temperature is ideal for teachers in the process of teaching and learning. The United States Environmental Protection Agency (EPA) also maintains that within school settings poor management of indoor temperature and temperature have adverse effects on not only learners' performances but also those of teachers. Even moderate changes in room temperature were noted to have effect on teachers' mental task performance in addition, multiplication and sentence comprehension. In spite of the studies of the above researchers, no specific temperature range was suggested for optimum school task performance.

### **Space Availability and Teachers' Productivity**

Space availability refers to the allocation for classrooms, science labs, open spaces and offices. It is defined in the context of psychological and pedagogical, achievement and attitudes of the teachers. The space features played a major role in improving teaching and learning in schools and is identified as major determinants of teachers' productivity. This is because it is capable of stimulating teachers to engage in the teaching and learning process as well as to assist in the development of their skills or cognitive perception.

The actual physical layout of working environment is highly important when it comes to maximizing performance among teachers. When it's flexibly displays ease of communication and interpersonal access, the extent of teachers exhibiting their capacity will be high (Becker, 2002). When the teachers' office is too crowded with other teachers or restricted will lead to stress, pressure and other psychological effect. If teachers feel unstable or lack of freedom and motivation, on the short-run, it may lead to a very stressful environment which decreases the quality of the job performance.

According to Sehgal (2012), office furniture like desks, chairs, the filing system, shelves, drawers, etc., have a specified part to play hence it has to be placed in such away that will not impinge on work activities either in the offices or classroom. As noted by this scholar, the efficiency of the teachers is determined by suitability of their office and classroom. Thus, desirable designs that reflects on friendly and agreeable entrance areas, private places for students as well as public spaces foster a sense of community, with particular attention to the color used are seen as most viable for the teachers even the students (McGregor, 2004). Based on its fundamental roles, nowadays, schools create spaces that students want to go to, similar to the way cafes attract people, rather than the space being purely functional.

Decent facilities make additional contributions to teachers work. Siegel (1999) in his study observed that there was a direct relationship between architecture and the collaboration of teachers. For this scholar, the arrangement of space has immediate and far reaching consequences for teacher's ability to effectively and efficiently accomplish daily activities even in the formation of social and professional relationships and the sharing of information and knowledge. Consideration of the spaces where teachers meet and collaborate is just as important as the design of the classroom. For instance, seating arrangements can be territorial (space organized by individual desk ownership) or functional (space organized for a specific activity). There can often be an action zone where an increased involvement between teacher and students occurs across the front and down the middle of the room.

### **Empirical studies**

In a study carried on by khaled and Haneen (2017) on Influence of Work Environment on Job productivity: A Case Study of Engineering Company in Jordan .56.0% of respondents feel that their work environment is comfortable, while the other 44.0% relate the discomforts to cold temperature as they always must maximize the amount of clothing once they arrive at work (during cold weather). Finally, the highest percentage of respondents' ranks reached 68.0% accepting that temperature affects their productivity.

Studies on the impacts of light on humans' productivity date back to 1920s. One of these early studies examined the impact of lighting quality on silk weavers. In this study, Robbins (1986) found out that people with views of natural vegetation posed more attention during the work hours. The view from windows is not the only important part of day lighting techniques. Another study conducted by Robert (1990) showed that employees of West Bend Mutual Insurance Company who moved into a new building and who were provided with personal control over their workstation environmental attributes such as temperature, task lighting registered higher performance overall compared to the previous environment.

### **Review of the Related Literature**

Working environment is a composite of three major sub-environments: the technical (tool), human (peer action) and the organizational (system procedures) environment. A decent working environment is a condition where individuals can do their jobs in an ideal, secure, healthy, and comfort way. Therefore, many studies classify the work environment into toxic and conducive environments. Unhealthy and unsafe work environment in terms of poor ventilation, immoderate noise, inadequate lighting etc. affect teachers' productivity.

Some of the factors that influence the workplace include: cleanliness, water, lighting, coloring, security and music. Many work environment studies have shown that workers are satisfied with reference to specific work environment features. These features preferred by users significantly contribute to their workspace satisfaction and performance. Those features include: ventilation rates, lighting, access to natural light and acoustic environment.

Management's new challenge is to form an environment that attracts, retain and motivate teachers. The responsibility lies with managers and supervisors at all levels of the organization. They have to create a working environment where people enjoy what they do, feel like they have a purpose, have pride in what they do and can reach their potential. The work environment affects teachers' morale, productivity and engagement- both positively and negatively. In an effort to motivate workers, firms have put into practice a number of activities such as performance based pay, employee involvement, recruiting agreements, practices to help balance work and family life as well as various forms of information sharing.

## **METHODOLOGY**

### **Design of the Study**

The study adopted descriptive survey design to examine effects of working environment on teachers' productivity in Port-Harcourt metropolis, Rivers State.

### **Population of the Study**

The population of the study will consists of 22 (principals) 440 (teachers) from 22 senior secondary schools in Port-Harcourt metropolis, Rivers State.

### **Sample Size and Sampling Technique**

The sample size consists of 462 respondents. The researcher adopts a purposive sampling technique.

### **Development of the Instrument**

The instrument was questionnaire titled; working environment and teachers' productivity questionnaire (WETPQ). The questionnaire consists of two sections. Section A contains two questions on demographical information while Section B contains fifteen (15) structured items. A likert type scale was used and the respondents select one of the four (4) options: Strongly Agree (SA) Agree (A) Disagreed (D) and Strongly Disagree (SD).

### **Validation of the Instrument**

To validate the instrument, working environment and teachers' productivity questionnaire (WETPQ), the content validity was determined by the expert judgment of the supervisor and two experts in the

field. The suggestions in respect of the scope, comprehensive, face and logical validity will be used to draw the final instrument.

**Reliability of the instrument**

Test-retest method was used for the reliability of the instrument. The instrument was administered to Twenty (20) respondents outside the sample area of the study. The first and second scores were analyzed using the Pearson Product Moment Correlation Coefficient which resulted to 0.78.

**Administration of the Instrument**

The researcher in collaboration with the research assistants administered the copies of the questionnaires to the teachers and principals. The researcher spent time with the respondents to clarify questions on any issue as related to the filling of the copies of the questionnaire. Thus, 462 copies of questionnaire were administered and retrieve 401 copies for the analysis of the research questions and hypotheses.

**Methods of Data Analysis**

The data collected from the administration of the instrument on the respondents was analyzed through the use of on frequency tables. Mean scores and standard deviation was used to analyze the research questions while z-test was used to analyze hypotheses.

**RESULTS:**

**Research question 1: How does lightening within the learning environment affect productivity of the teachers?**

**Table 4.1: weighted responses on lightening and teachers’ productivity**

	Items	Principals N=17		Teachers N=384		Grand mean	Remarks
		$\bar{X}$	Std	$\bar{X}$	Std		
1.	Inconvenient lighting is a source of distress to teaching and reading	3.2 3	0.77	2.94	0.89	3.09	Agreed
2.	The brightness of office or classroom light influences concentration, alertness, and task performance	3.2 5	0.72	3.29	0.69	3.27	Agreed
3.	Teachers’ physical and psychological health is affected negatively when the light is blurred.	3.2 1	0.74	3.24	0.75	3.23	Agreed
4.	Offices and class rooms with adequate lightening enhances concentration and relaxation.	3.2 0	0.78	2.88	0.69	3.04	Agreed
5.	It reduces inconvenience hence provide for comfortable environment for teaching and learning.	3.2 4	0.75	2.82	0.88	3.03	Agreed
	Total	3.2 3	0.75	3.03	0.78	3.13	

The findings of the above table 4.4 revealed that the brightness of office or classroom light influences concentration, alertness, and task performance(3.27), teachers’ physical and psychological health is affected negatively when the light is blurred(3.23) inconvenient lighting is a source of distress to teaching and reading(3.09), Offices and class rooms with adequate lightening enhances concentration and relaxation (3.04) and reduces inconvenience hence provide for comfortable environment for teaching and learning (3.03). Thus, it was generally accepted that lightening within the learning environment affect productivity of the teachers with the average mean score of (2.81).

**Research question 2: How does temperature of the learning environment does affect productivity of teachers?**

**Table 4.2: weighted responses on temperature and teachers' productivity**

S/no	Items	Principals N=17		Teachers N=384		Grand mean	Remarks
		$\bar{X}$	std	$\bar{X}$	std		
1.	Moderate cool temperature increases productivity	3.16	0.76	3.29	0.77	3.23	Agreed
2.	Hot temperature decreases concentration	3.18	0.77	3.18	0.95	3.18	Agreed
3.	When office is ill ventilated, efforts of the teachers are debilitating effort	3.16	0.79	3.24	0.75	3.2	Agreed
4.	When the temperature is clement, it creates opportunity to reach their full potential.	3.27	0.69	3.29	0.99	3.28	Agreed
5.	Excessive heat or cool increases productivity	1.12	0.80	1.18	0.80	1.15	Disagreed
Total		3.18	0.76	3.24	0.85	2.81	

The result of the above table 4.5 indicated that when the temperature is clement, it creates opportunity for teachers to reach their full potential(3.28), moderate cool temperature increases productivity (3.23), when office is ill ventilated, efforts of the teachers are debilitating (3.2), hot and cool temperature decreases concentration (3.18), excessive heat or cool increases productivity (1.15). It was generally agreed that temperature of the learning environment affect productivity of teachers with the average mean score of (2.81).

**Research question 3: How does space availability for learning affects teachers' productivity?**

**Table 4.3: weighted responses on space availability and teachers' productivity**

S/NO	Items	Principals N=17		Teachers N=384		Grand mean	Remarks
		$\bar{X}$	Std	$\bar{X}$	Std		
1	Adequate ventilation and indoor air quality and lighting for effective teaching and learning.	3.25	0.77	3.12	0.60	3.19	Agreed
2	Protect teachers from injury owing to bad posture.	3.17	0.77	3.18	0.63	3.18	Agreed
3	Reduces the risk of distraction or fidgeting owing to discomfort.	3.17	0.77	3.12	0.69	3.15	Agreed
4	Allows learning task to be carried out efficiently without fatigue.	3.14	0.83	3.41	0.79	3.28	Agreed
5	Creates space for special learning activities in the classroom.	3.11	0.81	3.53	0.71	3.32	Agreed
Total		3.17	0.79	3.27	0.68	3.22	

The result of table 4.6 shown that spacing allows learning task to be carried out efficiently without fatigue (3.28), creates space for special learning activities in the classroom (3.32), adequate ventilation and indoor air quality and lighting for effective teaching and learning (3.19), adequate spacing protect teachers from injury owing to bad posture (3.18) and reduces the risk of distraction or fidgeting owing to discomfort (3.15). Thus, it was accepted that space availability for learning affects teachers' productivity with the average mean score of (3.22).

**Test of Hypotheses**

Ho<sub>1</sub>: There is no significant difference in the opinions of principals and teachers on how lightening within the learning environment affect productivity of the teachers.

**Table 4.4: test of hypothesis using z-test**

Respondents	N	$\bar{X}$	STD	DF	Z-cal	Z-crit	Level of sign	Decision
Principals	17	3.23	0.75	399	0.75	1.96	0.05	Not significant
Teachers	384	3.03	0.78					

The result of table 4.5 indicated that the calculated z-calculated (0.75) was less than the z-critical (1.96) at the degree of freedom (68) and 0.05 significant levels. Hence, the null hypothesis of no significant difference in the opinions of principals and teachers on how lightening within the learning environment affect productivity of the teachers was accepted.

Ho<sub>2</sub>: There is no significant difference in the opinions of principals and teachers on how temperature of the learning environment affects productivity of teachers.

Table 4.5: test of hypothesis using z-test

Respondents	N	$\bar{X}$	STD	DF	Z-cal	Z-crit	Level of sign	Decision
Principals	17	3.19	0.76	399	0.71	1.96	0.05	Not significant
Teachers	384	3.24	0.85					

The result of table 4.5 indicated that the calculated z-calculated (0.71) was less than the z-critical (1.96) at the degree of freedom (399) and 0.05 significant levels. Hence, the null hypothesis of no significant difference in the opinions of principals and teachers on how temperature of the learning environment affects productivity of teachers was accepted.

Ho<sub>3</sub>: There is no significant difference between in the opinions of principals and teachers on how space availability for learning affects teachers’ productivity.

**Table 4.6: test of hypothesis using z-test**

Respondents	N	$\bar{X}$	STD	DF	Z-cal	Z-crit	Level of sign	Decision
Principals	17	3.17	0.79	399	0.34	1.96	0.05	Not significant
Teachers	384	3.27	0.68					

The result of table 4.6 indicated that the calculated z-calculated (0.34) was less than the z-critical (1.96) at the degree of freedom (399) and 0.05 significant levels. Hence, the null hypothesis of no significant difference in the opinions of principals and teachers on how temperature of the learning environment affects productivity of teachers was accepted.

**DISCUSSION OF FINDINGS**

The findings of hypothesis one revealed that no significant difference exist in the opinions of principals and teachers on how lightening within the learning environment affect productivity of the teachers. This may be that the respondents understand the implication of making light available in the environment of teaching and learning. Statistically, it was indicated that the brightness of office or classroom light influences concentration, alertness, and task performance; teachers’ physical and

psychological health is affected when the light is blurred, inconvenient lighting is a source of distress to teaching and reading and offices and class room with adequate lightening enhances concentration and relaxation leading to increase in output measures. This perception agreed with the observation of Humphries (2005) who stated that lighting, coloring, security, ventilation rates, and access to natural environment affect productivity of the teachers.

The result indicated that no significant difference exist in the opinions of principals and teachers on how temperature within the learning environment affect productivity of the teachers. Hence, analyzes of the result indicated that when the temperature is pleasant, it creates opportunity to concentrate as moderate cool temperature increases productivity. This view agreed with Aamodt, (2004) who stated that good room temperature increases productivity and reduces stress in workers as it plays notable role in workplace environment. Similar experiences showed that temperature or climate change emanating from windstorms and rainstorms have significant relationship with teaching and learning in the secondary schools. This outcome may be explained from the perspective that windstorms and rainstorms are accompanied by violent winds; thunder and lightning that can blow away roof tops of buildings and destroy other school property, and so render classroom teaching, learning unproductive and administrative responsibilities redundant (Edo and Osuji,2016).

The result further showed that no significant difference in the opinions of principals and teachers on how space availability for learning affects teachers' productivity .Empirical data indicated that space availability allows learning task to be carried out efficiently without fatigue, enhancing special learning activities in the classroom , adequate ventilation and indoor air quality and lighting for effective teaching and learning are assured. It is also protect teachers from injury owing to bad posture as well as reducing the risk of distraction or fidgeting owing to discomfort. The arrangement of space has immediate and far reaching consequences for teacher's ability to effectively and efficiently accomplish daily activities even in the formation of social and professional relationships and the sharing of information and knowledge. Consideration of the spaces where teachers meet and collaborate is just as important as the design of the classroom. For instance, seating arrangements can be territorial (space organized by individual desk ownership) or functional (space organized for a specific activity (Siegel, 1999). According to Sehgal (2012), office furniture like desks, chairs, the filing system, shelves, drawers, etc., have a specified part to play hence it has to be placed or design in such a way that will not impinge on work activities either in the offices or classroom .

## **CONCLUSION**

Based on the findings of the study, it was concluded that adequate lightening in the learning environment, moderate temperature provides comfort and relaxation of the teachers and spacious offices and classrooms creates opportunity for special learning activities hence reducing the risk of distraction. In other words, productivity of the teachers is attributed to the working environment in secondary schools in Rivers State.

## **RECOMMENDATIONS**

- Favorable or adequate lightening should be provided for the comfort of teaching and learning.
- The temperature of the working environment be made moderate through the use of air condition that can be controlled based on the capacity needed by the individual.
- The classroom or offices should be spacious enough to enhance adequate learning and teaching activities.

## **SUGGESTIONS FOR FURTHER STUDIES**

- Effects of temperature on the teaching and learning in secondary schools in Rivers State.
- Influence of lightening on the teaching and learning of the students in secondary schools.
- Relationship between working environment and teachers' academic performance.
- Assessing the impact of space availability on the teachers' capacity to enhance teaching in secondary schools.

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