



The Impact of Teachers' Dressing on Students' Academic Performance: A Case Study of Junior High Schools in Kumasi, Ghana

Belinda Owusu Zigli ^{a*}, Rebecca Essel ^a, David Delali Zigli ^b and Vivian Maanu ^c

^a Department of Educational Innovations in Science and Technology, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

^b Department of Mathematical Sciences, University of Mines and Technology, Tarkwa, Ghana.

^c Department of Mathematics, Akrokerri College of Education, Akrokerri, Ghana.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JESBS/2024/v37i31311

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/113787>

Original Research Article

Received: 07/01/2024

Accepted: 11/03/2024

Published: 03/05/2024

ABSTRACT

Ghana has seen persistent agitations for education reforms due to the unsatisfactory outcome of education objectives since independence. The major reasons were no different from the latest reform that was introduced, the Junior High School (JHS) system. That was so because it was yet another review of the entire education system of the country with the view of making it responsive to current global and social challenges. One of the concerns has been whether the influx of numerous foreign dress styles among teachers in Ghanaian society has an effect on students, teachers, and quality education. The aim of this research is to assess the dressing of teachers and

*Corresponding author: E-mail: belindazigli@gmail.com;

its impact on junior high school students' academic performance. The research identified, discussed, and assessed the impact of teachers' dressing on students' performance in selected junior high schools in the Oforikrom Municipality in the Ashanti Region of Ghana. Both quantitative and qualitative research designs were used for the research. The questionnaire, observations, interviews, and focus group discussions were the instruments used in the collection of the data. A simple random and cluster area sampling method was adopted to select the respondents for the study. The accessible population for the study consisted of three hundred (300) JHS students, fifty (50) teachers, twenty (20) parents, and ten (10) education officers. A comparative analysis of four categories (students, teachers, parents, and education officers) on the impact of teachers' dressing on students' performance was performed. The study identified, assessed, and discussed the impact of teachers' dressing on students' academic performance in some selected junior high schools in the Oforikrom Municipality. Out of the hypothesis speculated before the investigation, it was established, with *p-values* greater than 0.05, from a paired two sample T-test analysis that there is a significant effect of teachers' dressing on students' performance. The study recommended that teachers should be given a dressing allowance to allow them to purchase appropriate school attire, and the government should institute a non-destructive dress code for teachers. The study will help teachers dress more appropriately and will have a significant impact on the lives of students.

Keywords: Education; dressing; teachers; students.

2010 Mathematics Subject Classification: 53C25; 83C05; 57N16.

1. INTRODUCTION

"A teacher, also called a schoolteacher or formally an educator, is a person who helps students acquire knowledge, competence, or virtue. Informally, the role of a teacher may be taken on by anyone (for example, when showing a colleague how to perform a specific task). In some countries, teaching young people of school age may be carried out in an informal setting, such as within the family (homeschooling), rather than in a formal setting, such as a school or college. A teacher's role may vary among cultures. Teachers may provide instruction in literacy and numeracy, craftsmanship or vocational training, the arts, religion, civics, community roles, or life skills" [1].

"Formal teaching tasks include preparing lessons according to agreed curricula, giving lessons, and assessing pupils progress. A teacher's professional duties may extend beyond formal teaching. Outside of the classroom, teachers may accompany students on field trips, supervise study halls, help with the organisation of school functions, and serve as supervisors for extracurricular activities. In some education systems, teachers may be responsible for students discipline" [2].

"As a teacher, it can be tricky to pick out clothing that makes one appear professional and

approachable to their students. Though many schools have a dress code for students, they do not usually have a clear one for teachers or educators. But with a few staple items and some smart accessorising, one can create outfits that are appropriate for the classroom and still show off their personalities. There is a saying, 'Never Judge a Book by its Cover' [3,1]. What this phrase is really trying to say is that "first impressions last." Dress is nothing in relation to the learning of students. However, the outlook of a teacher in a classroom can have an impact on the learner's opinions or performance and can create either a negative or a positive type of educational atmosphere.

"Psychology works in students' minds to show that, with a smart outlook, smart presentation is possible" [2]. "Therefore, if teachers can learn to understand and practice proper dressing and attire for the classroom, they can expect to have a proper relationship with the learners because their ability to serve as a role model and an authoritative figure is largely determined by their outlook. The impression teachers leave on students may last a lifetime. Most people remember a certain teacher from their time in school who has either had a positive or negative impact on their educational experiences. Teachers who dress professionally as compared to teachers who dress casually may encounter variations in behaviour and academic achievement in students" [4].

“Teachers, knowingly or unknowingly, serve as role models in everything they do, including how they dress. Many authors agree that dress communicates who teachers are as individuals and as professionals” [5].

“The student’s perceptions of teachers may contribute to behavioural and academic inconsistencies. Previous research at the secondary and college levels has revealed that teacher attire affected students’s learning, discipline, work habits, and attitudes” [6]. “Teacher attire, dress, and clothing are used interchangeably. Merriam-Webster defines attire as a dress, clothing, apparel, or outfit. Dress can be explained as an assemblage of body modifications and/or supplements displayed by a person in communicating with other human beings” [7,8]. Clothing is defined as a primary impression-management tool. Clothing and the style of dress can communicate status and power, [9]. “Professional dress can be described as classic business attire consisting of dark business suits, white shirts, tie, and dress shoes for men, skirts with sheer hose, blouses, and high-heeled pumps for women” [10]. “Moderately formal or casual professional dress is described as khaki slacks for men, button-up shirts, ties, and brown leather loafers. Similarly, examples of women’s attire are skirts, sweaters, turtlenecks or blouses, and low-dress pumps. Examples of casual dress are faded, worn blue jeans, sport shirt or t-shirt, unbuttoned flannel shirt, and sneakers” [11]. “The teacher should dress professionally enough to establish authority and maintain professionalism. Hence, how dressing usually influences learning and students’s performance is the prime concern of this study”.

“Education is both the act of imparting knowledge to others and the act of receiving knowledge from someone else. Education also refers to the knowledge received through schooling or instruction and to the institution of teaching as a whole” [12]. “Education is the process of assisting learning or the acquisition of knowledge, skills, values, beliefs, and habits. Educational methods include teaching, training, storytelling, discussion, and directed research. Education can take place in formal or informal settings. Any experience that has an influential effect on the way one thinks, feels, or acts may be considered educational. These indicate that education is the key to success and the pillar of national and socio-economic development” [13]. It seems as though there have been many arguments in the educational world about

teachers dressing, but very few studies prove that it really matters [14]. However, the School Superintendents Association dug into this topic and found, after interviewing students in Buffalo, that teachers who wore “blue jeans” do look friendlier but do not have much credibility. They were unconcerned with how their teachers dressed on a regular basis. They also found that students are aware of the impact that clothes have on people. The students felt that their own teachers judged them based on how they were dressed” [15]. Another study from Southern Illinois University found that about 55 percent of the first impressions of a teacher’s professionalism were based on their appearance. This implies that the way a teacher dresses does indeed have an impact on what people think of him or her and whether he or she is deemed a professional or not [16], from the popular educational book “The First Days of School,” says that what a teacher wears sends a message to their students. The reality is that people look at you and form perceptions. He tells teachers to ask themselves to think about how their students will perceive them based on what they are wearing.

There is a link between one’s appearance and how one thinks and acts. The sort of clothes one wears influences cognition extensively, influencing the processing style that alters how things, people, and events are perceived,” according to research published in the journal of Social Psychological and Personality Science. If you’re a teacher who hasn’t given much consideration to what you wear to work, it’s time to think about how much what you wear may affect you and others around you [17]. It is against this background that this research is undertaken to find out whether society influences the dressing of teachers and whether teachers transfer these influences on to the students and their effects on the learning and performance of the students. The research also looked at other factors that are likely to cause poor performance and less concentration among students. This concern is necessary because people often relate decent dressing to morality, cultural values, cultural sensitivity, and cultural education [18,19].

The Ghanaian government has continually questioned the justification of spending huge sums of money on education, attached to numerous education reforms, reviews, commissions, and committees set up every now and then by successive governments. In

September 2007, Ghana made another giant step in introducing another major education reform packaged as the junior high school (JHS) and senior high school (SHS) [20,21]. All these measures appeared not to have yielded positive results over the years, especially for the products of the education system. The impression teachers leave on students may last a lifetime. Most people remember a certain teacher from their time in school who has either had a positive or negative impact on their educational experiences. Teachers, knowingly or unknowingly, serve as role models in everything they do, including how they dress [22]. Less concentration and poor performance have been on the increase. Interrogation with a few junior high school (JHS) students indicates that students find it difficult to concentrate in class during lessons. One of the factors, among others, responsible for such a distraction is indecent dressing by teachers [23,24]. This research aims at assessing the impact of teachers' dressing on students' academic performance in junior high schools.

2. METHODOLOGY

The research design used in the study was a qualitative research design that focused on understanding social phenomena from the perspective of human participation in the study. and quantitative research design, which help the researcher obtain statistical analysis of numerical data to understand and explain the study. The population for the study was the junior high school students, teachers, parents, and education officers in the Oforikrom municipality. The target population was form one (1), form two (2), and form three (3) junior high school students. The research instruments employed for the study were a questionnaire, an interview, and observation. The ethical considerations of confidentiality and anonymity were also highlighted in the study. Finally, the data analysis plan was dealt with, where the data gathered were analysed and given the right interpretation, conclusions drawn, and recommendations made. Three hundred (300) students, fifty (50) teachers,

twenty (20) parents, and ten (10) education officers were sampled for the study. The cluster area and simple random sampling were the sampling techniques used. A *p-test* analysis was performed to test the hypothesis.

2.1 Population and Sampling

The scientific method of population identification and sampling strategies were applied. For example, cluster area sampling and simple random sampling were preferred and adopted based on the characteristics of the population.

2.1.1 The population

The identified population was based on the location and characteristics of the schools in the Oforikrom Municipality of Kumasi. The schools in these areas are found to be widely scattered, so they were put into cluster areas based on their proximity and peculiarities. Most communities are heterogeneous. The cluster areas are Oforikrom, KNUST, and Emena communities.

2.1.2 Sampling strategy

After identifying the population in the cluster areas, three (3) schools were selected from each cluster based on simple random sampling. They are Oforikrom M/A Block A Junior High School, Oforikrom M/A Block B Junior High School, and Ummul Qura Junior High School, which are at Oforikrom and Weweso M/A Junior High School, Kotei R/C Junior High School, and Ayeduase R/S Junior High School at KNUST. The others are Emena M/A Junior High School, Kotei-deduako M/A Junior High School, Abdullah Ahmed Aluwaisi Junior High School, and Boadi M/A Junior High School.

2.1.3 Target population

The target population was identified as all the public junior high schools in the Oforikrom Municipality. The recorded statistics are as stated in Table 1:

Table 1. Target Public Junior High Schools in Ashanti Region

SN	School	Number
1	Number of public Junior High Schools in Ashanti Region	1,208
2	Student population in Junior High Schools in Ashanti Region	175,482
3	Teacher population in Junior High Schools in Ashanti Region	2,654

SOURCE: Ashanti Regional Education Office – Statistics Department - 2007

2.1.4 Accessible population

The accessible population was identified as all the public junior high schools in Oforikrom. The percentages stated are against the public junior high schools in the Oforikrom Municipality. The recorded statistics are as stated in Table 2.

Based on the statistics, the Krejcie and Morgan (K & M) sampling table was used. According to the K & M sampling table, forty thousand population (40,000 N) is equivalent to three hundred and eighty population sizes (380 S). Forty thousand (40,000) people were used because they constitute an appreciable percentage of the accessible population. From Oforikrom Municipality, ten (10) schools were selected, along with teachers, parents, and education officers. The statistics are as stated in Table 3.

3. RESULTS AND DISCUSSION

3.1 Descriptive Analysis of Data

To identify the impact of teachers' dressing on students' academic performance in some selected junior high schools in the Oforikrom Municipality, the data collected was analysed as follows:

Fig. 1 presents the analysis of responses in which students discuss the teacher's dressing while the lesson is ongoing. From the figure, 90 students (30%), 22 teachers (44%), 7 parents (35%) and 7 education officers (70%) officers strongly agree with the fact that students discuss the teacher's dressing while the lesson is ongoing. So, the linear line in the figure is slanted

downward, indicating that the majority of the respondents and stakeholders agree with the fact that students discuss the teacher's dressing while the lesson is ongoing.

Fig. 2 presents the analysis of responses showing that teachers with strong facial makeup and colourful hairstyles disturb the attention of students in the classroom.

From the figure, 106 students (35.33%), 24 teachers (48%), 5 parents (25%) and 3 education officers (30%) strongly agree with the fact that teachers with strong facial makeup and colourful hairstyles disturb the attention of students in the classroom. The linear line is strongly slanted on the graph to attest to the question above.

Fig. 3 presents the analysis of responses that students pay attention to in class when a teacher dresses professionally.

From the figure, 147 students (49%), 10 teachers (20%), 2 parents (10%) and 4 education officers (40%) strongly agree that students pay attention in class when a teacher dresses professionally.

The linear graph is strongly slanted downward to attest to the question.

Fig. 4 presents the analysis of responses that show that the outlook of teachers creates a learning impression in the minds of students. From the figure, 89 students (29.67%), 5 teachers (10%), 15 parents (75%) and 5 education officers (50%) agree that the outlook of teachers creates a learning impression in the minds of students at first glance.

Table 2. Accessible public junior high schools in kumasi metropolis

SN		Number	Percentage
1	Number of Public Junior High Schools in Oforikrom Municipality	22	13.01%
2	Students population in Junior high Schools in Oforikrom Municipality	6,421	94.99%
3	Teacher population in Junior High Schools in Oforikrom Municipality	316	4.67%

SOURCE: Oforikrom Education Office – 2021

Table 3. Total sampled population from Oforikrom municipality

SN	Categories	Number Questionnaire	Percentage
1	Students	300	78.9%
2	Parents	20	5.3%
3	Teachers	50	13.2%
4	Education officers	10	2.6%
5	Total	380	100%

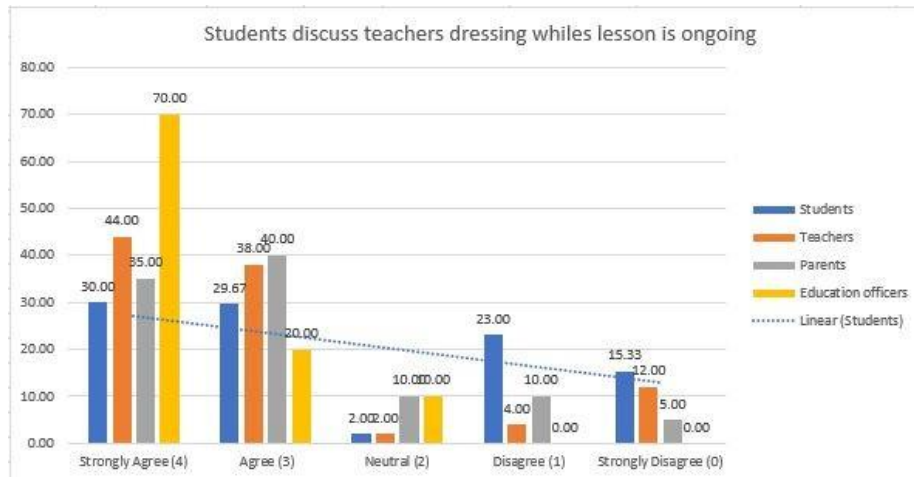


Fig. 1. Analysis of response that students discuss teacher’s dressing while lesson is ongoing

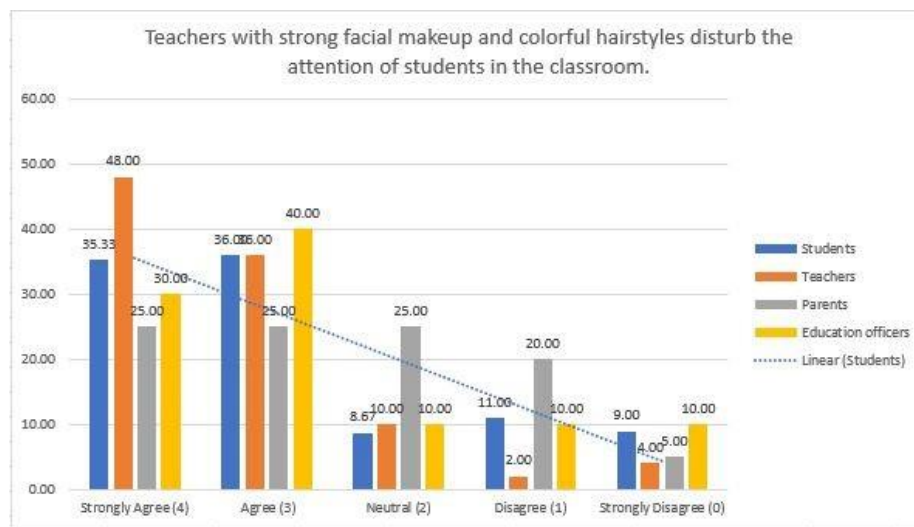


Fig. 2. Analysis of response that teachers with strong facial makeup and colourful hairstyle disturb the attention of students in the classroom

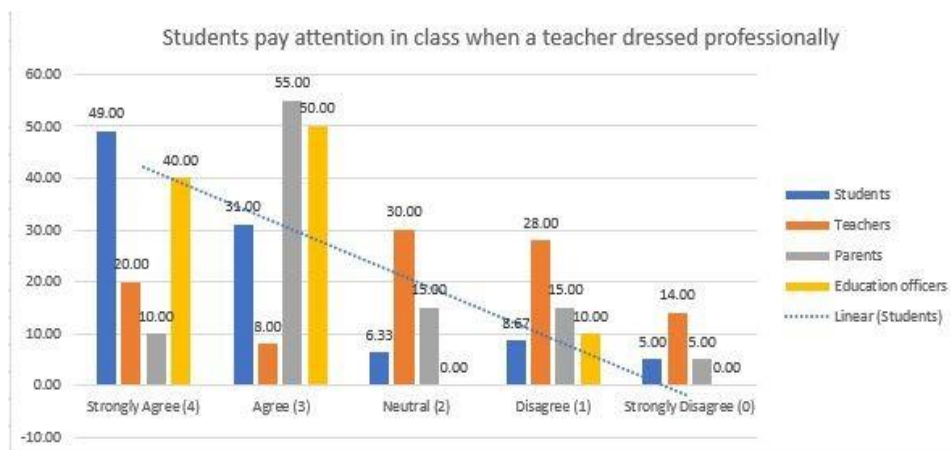


Fig. 3. Analysis of response that students pay attention in class when a teacher dresses professionally

The linear line is strongly slanted down to attest to the question above.

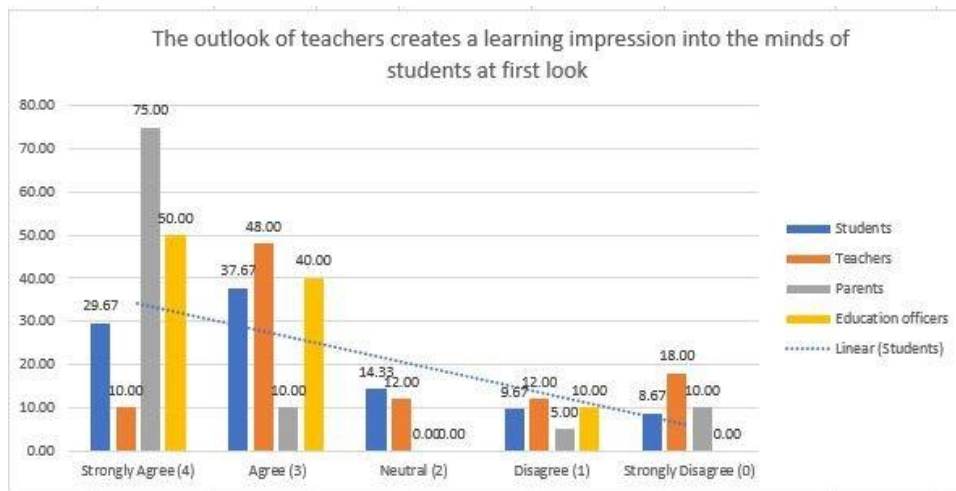


Fig. 4. Analysis of response that the outlook of teachers creates a learning impression into the minds of students

3.2 Statistical Analysis of Data

Table 4 shows the comparative analysis of the four categories respondents/stakeholders on how students discuss teachers dressing while lesson is ongoing.

As seen from the table, all the *p-values* (0.056986, 0.060964, 0.061297, 0.265989, 0.198061, 0.126515) > 0.05 from the Paired Two sample T-test suggest that there is no significant difference in the responses of all respondents. All the respondents agreed that students discuss teachers dressing while the lesson is ongoing.

Table 5 shows the comparative analysis of the four categories on whether students pay

attention in class when a teacher dresses professionally.

As seen from the table, all the *p-values* (0.258563, 0.128571, 0.122335, 0.297074, 0.098945, 0.069137) > 0.05 from the paired two-sample T-test suggest that there is no significant difference in the responses between the stakeholders. This simply suggests that students pay attention in class when a teacher dresses professionally.

Table 6 shows the comparative analysis of the four categories (students, teachers, parents, and education officers) on how teachers with strong facial makeup and colourful hairstyles disturb the attention of students in the classroom.

Table 4. Test results: Students discuss teachers dressing while lesson is ongoing

t-statistics (<i>p-values</i>)	Students	Teachers	Parents	Education Officers
Students		3.014965 (0.056986)	2.930739 (0.060964)	2.924013 (0.061297)
Teachers			1.363636 (0.265989)	1.647258 (0.198061)
Parents				2.10042 (0.126515)
Education Officers				

Table 5. Test result: Students pay attention in class when a teacher dressed professionally

t-statistics (<i>p-values</i>)	Students	Teachers	Parents	Education Officers
Students		1.390548 (0.258563)	2.083509 (0.128571)	2.135825 (0.122335)
Teachers			1.259029 (0.297074)	2.365068 (0.098945)
Parents				2.77746 (0.069137)
Education Officers				

Table 6. Teachers with strong facial makeup and colourful hairstyles disturb the attention of students in the classroom; p-values and t-statistics

t-statistics (p-values)	Students	Teachers	Parents	Education Officers
Students		2.598905 (0.080452)	2.296445 (0.105331)	2.441786 (0.092353)
Teachers			0.781079 (0.491726)	1.485161 (0.234176)
Parents				2.19089 (0.116158)
Education Officers				

As seen from the table, the *p-values* (0.080452, 0.105331, 0.092353, 0.491726, 0.234176, 0.116158) > 0.05 from the Paired Two sample T-test suggests that there is no significant difference in the responses of students and other stake holders.

This is simply because teachers with strong facial makeup and colourful hairstyles disturb the attention of students in the classroom.

Table 7 shows the comparative analysis of the four categories on whether teachers must be given a dress style.

As seen from the table, the *p-values* (0.04573, 0.037898, 0.008175, 0.03893) < 0.05 from the Paired Two sample T-tests suggest that there is a significant difference in the responses of students-parents, students-education officers, and teachers-education officers, respectively.

However, with *p-values* (0.08427, 0.85427) >

0.05, there is no significant difference in the response of other stake holders. This is simply because teachers, parents, and education officers do not buy into the idea of the government giving teachers a dress style.

Table 8 shows the comparative analysis of the four categories on whether students pay attention in class when a teacher dresses professionally.

As seen from the table, all the *p-values* (0.258563, 0.128571, 0.122335, 0.297074, 0.098945, 0.069137) > 0.05 from the paired two-sample T-test suggest that there is no significant difference in the responses between the stake holders. This simply suggests that students pay attention in class when a teacher dresses professionally.

Table 9 shows the comparative analysis of the four categories on how Teachers dress styles affect the performance of students.

Table 7. Test results: Teachers must be given a dress style

t-statistics (p-values)	Students	Teachers	Parents	Education Officers
Students		2.545548 (0.08427)	3.300108 (0.04573)	3.557122 (0.037898)
Teachers			6.27387 (0.008175)	3.519531 (0.03893)
Parents				-0.2 (0.85427)
Education Officers				

Table 8. Test result: Students pay attention in class when a teacher dressed professionally

t-statistics (p-values)	Students	Teachers	Parents	Education Officers
Students		1.390548 (0.258563)	2.083509 (0.128571)	2.135825 (0.122335)
Teachers			1.259029 (0.297074)	2.365068 (0.098945)
Parents				2.77746 (0.069137)
Education Officers				

Table 9. Test results: Teachers dress styles affect the performance of students

t-statistics (p-values)	Students	Teachers	Parents	Education Officers
Students		3.70991 (0.034044)	2.94338 (0.060346)	3.034932 (0.056092)
Teachers			1.384491 (0.260215)	1.577855 (0.212705)
Parents				0.57735 (0.604181)
Education Officers				

As seen from the table, the *p-values* (0.060346, 0.056092, 0.260215, 0.212705, 0.604181) > 0.05 from the Paired Two sample T-test suggests that there is no significant difference in the responses of the stake holders except students and teachers. This suggests that teachers dressing affects the academic performance of students.

3.3 Hypothesis

Now, based on the developed hypothesis of the study which is:

$H_0 : \mu = 0$ (There are significant effect of teachers dressing on students' academic performance).

$H_1 : \mu \neq 0$ (There are no significant effect of teachers dressing on students' academic performance).

It can be suggested from the analysis above that, there are significant effect of teachers dressing on students' academic performance since the Paired Two sample T-test produces the following *p-values*:

(0.056986, 0.060964, 0.061297, 0.265989, 0.198061, 0.126515) > 0.05. (From Table 4)

(0.080452, 0.105331, 0.092353, 0.491726, 0.234176, 0.116158) > 0.05. (From Table 6)

(0.258563, 0.128571, 0.122335, 0.297074, 0.098945, 0.069137) > 0.05. (From Table 8)

(0.060346, 0.056092, 0.260215, 0.212705, 0.604181) > 0.05. (From Table 9)

This, therefore, suggests that the observed data is sufficiently consistent with the null hypothesis $H_0 : \mu = 0$ (there are significant effects of teachers' dressing on students' academic performance) and that the null hypothesis may not be rejected.

4. CONCLUSION

The research identified, assessed, and discussed the impact of teachers' dressing on students' academic performance in some selected junior high schools in the Oforikrom Municipality. Out of the hypothesis speculated before the investigation, it was established, with *p-values* greater than 0.05, from a paired two-sample T-test analysis that there is a significant effect of teachers' dressing on students' performance.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Khine MS, Atputhasamy L. Self-perceived and students' perceptions of teacher interaction in the classrooms. Conference on Redesigning Pedagogy: Research, Policy and Practice, Singapore. Citeseer. 2005;32.
2. Kashem MA. The effect of teachers' dress on students' attitude and students' learning: Higher education view. Education Research International. 2019;9010589.
3. Dhurjati R, et al. Never judge a book by its cover: How NICU evaluators reach conclusions about quality of care. J Perinatol. 2018;38(6):751-758.
4. Jung H, Choi E. The importance of indirect teaching behaviour and its educational effects in physical education. Phys Educ Sport Pedagog. 2016;21(2):121-136.
5. Ivery G. Teacher Perceptions of How Attire Affects Student Behavior and Academic Performance: A Case Study [dissertation]. Concordia University (Oregon). 2020; 149.
6. Afifi M. A Conceptual Model for Regaining Teacher Credibility in the College Classroom. California State University, Fullerton. 2019;19.
7. Moore A, Edwards G, Halpin D, George R. Compliance, resistance and pragmatism: The (re) construction of schoolteacher identities in a period of intensive educational reform. Br Educ Res J. 2002;28(4):551-565.
8. Roach-Higgins ME, Eicher JB. Dress and identity. Cloth Text Res J. 1992;10(4):1-8.
9. Wayne SJ, Liden RC. Effects of impression management on performance ratings: A longitudinal study. Acad Manag J. 1995;38(1):232-260.
10. Morris TL, Gorham J, Cohen SH, Huffman D. Fashion in the classroom: Effects of attire on student perceptions of instructors in college classes. Commun Educ. 1996;45(2):135-148.
11. Anku J, Danso DK, Kuwornu-Adjaottor JE. Effects of women's seductive dressing on men's behaviour and judgement: A study in selected universities in Ghana. Adv Soc Sci Res J. 2018;5(2):8-21.

12. Shulman L. Knowledge and teaching: Foundations of the new reform. Harv Educ Rev. 1987;57(1):1-23.
13. Green L. Music, informal learning and the school: A new classroom pedagogy. Routledge; 2017. 226 p.
14. Bogdan R, Biklen SK. Qualitative research for education. Allyn & Bacon. 1997; 368.
15. Rollman SA. Some Effects of Teachers' Styles of Dress. ERIC. 1980;68.
16. Wong HK, Wong RT, Seroyer C. The first days of school: How to be an effective teacher. Harry K. Wong Publications. 2005;346.
17. Dellinger K, Williams CL. Makeup at work: Negotiating appearance rules in the workplace. Gender & Society. 1997;11(2):151-177.
18. Small ML, Harding DJ, Lamont M. Reconsidering culture and poverty. Sage Publications. 2010;226.
19. All-Bany BA. The aesthetic connotation of modes of dressing by teachers and their impact on quality education in the junior high school [dissertation]. KNUST. 2007; 113.
20. Workman JE, Freeburg BW. Teacher dress codes in employee handbooks: An analysis. J Fam Consum Sci. 2010;102(3):15-17.
21. Iddi A. A comparative assessment of the academic performance among public and private Junior High Schools in the Tamale metropolis of Ghana [dissertation]. KNUST. 2016;126.
22. Harbin TL. Influence of teacher attire on middle school students' academic achievement and behavior [dissertation]. University of Georgia. 2018;165.
23. Hermkens A-K. Engendering objects: Dynamics of barkcloth and gender among the Maisin of Papua New Guinea. Sidestone Press. 2013;388.
24. Kashem MA. The Effect of Teachers' Dress on Students' Attitude and Students' Learning: Higher Education View. Education Research International. 2019; 9010589. DOI:10.1155/2019/9010589.

© Copyright (2024): Author(s). The licensee is the journal publisher. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/113787>