Relationship Between Faculty Role Change and Performanceat the Three Stages of Teaching During E-learning

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ABSTRACT: *This paper investigates the effect of shifting roles of faculty in educational delivery in e-learning environments at the pre-teaching stage (the preparation stage before lecturing), teaching stage (during lectures) and post-teaching stages (after lecturing) in both private and public Universities in Ghana. Researches have shown that e-Learning has brought about a transformation in teaching and learning. The lecturer's role is redefined from the possessor of knowledge to a facilitator who guides students to acquire knowledge. A sample of 300 lecturers out of 1,800 was drawn from both private and public universities in Ghana. Regression analysis was used to determine the nature of the relationship. A model was developed to establish a relationship between the variables. The research found that there is a strong relationship between the independent variables (overall role change) and the dependent variable (lecturer performance at the pre-teaching stage). A strong relationship between the performance of lecturers at the teaching stage and role change was also observed. However, there was no relationship between the performance of lecturers at the post-teaching stage and role change. The results show that lecturers' role change influenced their performance positively at the pre-teaching and teaching stages only. Understanding the relationship between lecturer's role change and their performance at the three stages due to adoption of e-learning, will enable lecturers position themselves to be effective lecturers despite the change in role.*

Keywords: Role change, Faculty, Performance, E-Learning, Teaching Stages

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1. Introduction

Application of technology in education has become a vital tool for educational professionals and educational institutions in recent days. The growth and expansion of the Internet and communication technologies has greatly influenced the way we teach and learn. In this modern and advancing age, technology is not only a powerful complement to traditional teaching methods in higher education but has become an inexorable component of the knowledge delivery process (Addo, 2001). E-learning has become a household name in education and almost all learning environments.

Research has shown that application of these information technology tools is transforming education and the role of actors in the field of education particularly of students/learners and faculty. According toTanrýverdi, B., Ulusoy, Y. Ö., & Çevirme, H.

(2009), lecturers are losing their traditional function of being the main source of knowledge. The impact of this transformation on teaching and learning is of great concern. Wake (2007) revealed a complex relationship between the introduction of technology and changes to teacher roles, and the teaching-learning environment in general. According to Culp, Honey and Mandinach (2005), the aim of technologies in the process of higher education is to be a clear and universally available tool which allows students to learn and teachers to teach more effectively and efficiently. To maximise the benefits of e-learning, there is a need to examine and address the needs and behavior of learners and instructors. This research examines the relationship between lecturers' role change and their performance at the pre-teaching stage (the preparation stage where lecturers prepare before the delivery of lectures), the teaching stage (actual delivery of lectures) and the post teaching stage (after lecturing). Lecturing and teaching are used interchangeably in this research.

2. Research Problem

The merger between e- learning and the traditional methods of teaching and learning has brought about a change in the role of the lecturer. The rapid growth in the adoption and use of e-learning has affected the role of lecturers and placed lecturers in a quandary. The problem is whether the change in role has a positive or negative relationship with lecturers' performance at the pre-teaching, teaching and post-teaching stages. This study investigates the relationship between the lecturers' role change and their performance during the pre-teaching, teaching and post-teaching stages.

3. Research Hypothesis

The study sought to test the following hypothesis:

1.Ho: There is no relationship between lecturers' role change and their performance at the pre-teaching stage.

2.Ho: There is no relationship between lecturers' role change and their performance at the teaching stage.

3.Ho: There is no relationship between lecturers' role change and their performance at the post-teaching stage.

4. Technology and Education

According to Dzidonu (2010), ICTs have been found to be a very vital tool for supporting education. The introduction of ICTs to support teaching, learning and administration of the educational delivery processes and systems has changed education delivery in a number of countries in both the developed and developing world. He notes that the change brought about major impact on the development, provision and delivery of educational and training programs at all levels of the educational system in most countries of the world.

According to Noor-Ul-Amin, S., (2013), e-learning today, is almost an inevitable way to increase flexibility and improve access to tertiary education noting further that the ever-growing population of learners especially at the tertiary level coupled with the demands of balancing work, family life, and learning make e-learning a valuable and inevitable option.

Previous research establishes the fact that there is a transformation in education brought about by the birth of e-Learning (Barr &Tagg, 1995; Brown, 2005; Bates, 2005; Prensky, 2007). This transformation affects both teaching and learning. What started as the use of technology to teach and learn has progressed and developed, bringing about a transformative effect (Addo, 2001). This transformation has brought about a shift from the traditional method of teaching to a new way of teaching, causing a change in the role of slecturers. This new roles of lecturers are pointed out by various authors such as Crosby(2000), Lavriè (2006) and Wake (2007).

5. New Roles and Relationships

Review of literature shows that the current trend in eLearning is having a transformative effect on education particularly at the tertiary level thus presenting shifting educational paradigms (Barr &Tagg, 1995). The role of the lecturer is being changed (Crosby, 2000). The lecturer (teacher) has a dual role – he first becomes a learner then a lecturer. This dual role has come about as a result of the introduction of technology. The lecturer now has to be educated or educate himself on these technologies before he can successfully use them to enhance teaching and learning.

According to Wake et al (2007), advances in e-learning have also altered roles and relationships within the educational environment. The traditional roles of lecturers and learners as well as their relationships are being redefined. The shift in role creates a room for debate and research. This role change leaves the lecturer (faculty) wondering if their traditional role as the sole possessor of knowledge is not better than the current role (facilitator) redefined by e-learning. Digital tools place new demands on the tasks and responsibilities of lecturers and can influence lecturer roles.

Singh, O'Donoghue, & Worton, (2005) argues that faculty question their values and identity as lecturers when they move from the position of control in the classroom to serving as a helper of individuals and small groups of students, especially since their intervention in the learning process often comes only at the invitation of the student. They anticipate that the dynamic nature of the IT industry in conjunction with evolving eLearning technologies has created a tension for lecturers in higher education, thus, creating new educational issues for them, such as changing work patterns and in some cases the reluctant integration of technology.

6. Methodology

The nature of the research questions makes this study quantitative. A survey method was used. The required primary data was collected through questionnaire which was originally developed and employed for the purpose of the study. The questionnaire, the main instrument for this study was in the form of a simple Word document. A web version was developed using google forms. These questionnaires were distributed to respondents by research assistants. The target population in this research was university lecturers in Ghana.

A sample of 300 lecturers was selected from a population of 1800 from both public and private universities in Ghana. The universities were selected using convenience and purposive sampling. This is to allow the study to use samples from universities which were practicing some form of e-learning. After the identification of the universities, stratified and simple random sampling methods were used to select the lecturers from the universities included in the sample. With this technique, each university was treated as a stratum. The number of lecturers selected from each university (strata) was calculated using the sample proportion allocation technique.

Out of 300 questionnaires sent to respondents, 213 were retrieved representing71% return rate. Data was collected using rating questions. Questions asked respondents to rate their degree of agreement using a 5-point Likert scale. Respondents indicated whether they strongly disagreed, disagreed, not sure, agreed or strongly agreed to a given statement. Cronbach alpha was used to determine the reliability of the data collected for variables measured on the Likert scale. A Cronbach alpha of0.92was obtained indicating high reliability.Data was analyzed using the statistical package, SPSS.

Regression analysis was used to determine the nature of the relationship between the role change of lecturers and their performance at the pre-teaching, teaching and post teaching stages as well as to develop a model between the variables role change and performance. Role change was considered the dependent variable and performance at the various stages was considered the independent variable. Regression coefficients were calculated to determine the nature of the relationships between role change and performance at the various stages.

7. Results

This section presents an analysis of the data collected as well as an interpretation of the data.

The study at this stage sought to examine the relationship between the role change of lecturers and their performance at the pre-teaching, teaching and post-teaching stages. Regression analysis is used to determine the nature of the relationship and develop a model between the variables. This would assist to detect the performance of lecturers at the various stages which depends on their role change as a result of adoption of e-learning. Hence the performance of lecturers at the various stages was treated as the independent variables whiles role change was considered the dependent variable.

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.63	0.54	0.53	0.46

Table 1. Relation between Role Change and Lecturers Performance at the Pre-Teaching Stage

Source: Field Survey, 2014

From Table 1, the correlation coefficient (R) of 0.63 shows that there is quite a strong relationship between the independent variables (role change) and the dependent variable (lecturer performance at pre-teaching stage). The coefficient of determination (R-Square) of 0.54 also suggests that 54%of the variation in the performance of lecturers at the pre-teaching stage can be explained or accounted for by their role change. This means that the change in the role of lecturers is actually having influence on their performance at the pre-teaching stage. The relationship is however not so great.

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	55.18	1	55.18	135.47	.000
Residual	85.94	211	0.41		
Total	141.12	212			

Source: Field Survey, 2014

Table 2. Anova Table showing Type of Relation between Role Change and Lecturers Performance at the Pre-Teaching Stage

Source: Field Survey, 2014

The Anova table (Table 2) presented above, helps us to determine the type of relation between role change of lecturers and lecturers Performance at the pre-teaching stage. The table depicts an F-value of 135.47 and a significant p-value of 0.000 which is less than 0.05. We therefore reject the null hypothesis (H_0) which states that there is no relationship between lecturers' role change and their performance at the pre-teaching stage. We can therefore infer at a 95% confidence level that there is a positive relationship between the performance of lecturers at the pre-teaching stage and their role change.

	B	Std. Error	t	Sig.
(Constant)	1.159	0.217	5.33	0.000
Role change	0.65	0.056	11.64	0.000

Source: Field Survey, 2014

Table 3. Determination of the linear Regression Equation between Role Change and Lecturers Performance at the Pre-Teaching Stage

The regression shown in Table 3 presented above, explains the coefficients of the model. The significant value of 0.000 depicts that lecturers performance at the pre-teaching stage is positively affected by their role change. A linear equation is thus formed by connecting the two variables as shown in equation 1 below:

$$T1 = 1.159 + 0.65\,RC$$

In equation 1 above,

"***T1***" represents performance of lecturers at the pre-teaching stage.

"RC" represents role change of lecturers at the pre-teaching stage of teaching

The constant value of ***1.159*** is the rate of performance at the pre-teaching stage **T1** when there is no change in lecturer's roles at this stage. In other words, lecturers' performance will increase by ***1.159*** when there is no change in their role at this stage due to e-learning. The positive coefficient of ***0.65*** means that any unit change in lecturer's role would increase their performance at

this stage by 0.65units. Figure 1 shown below, is a scatter plot diagram showing the relationship between lecturers'role change and their performance at the teaching stage. The plot shows a strong positive association between the two variables with an upward trend line meaning that a slight increase in role change of lecturers will also increase their performance at this stage.

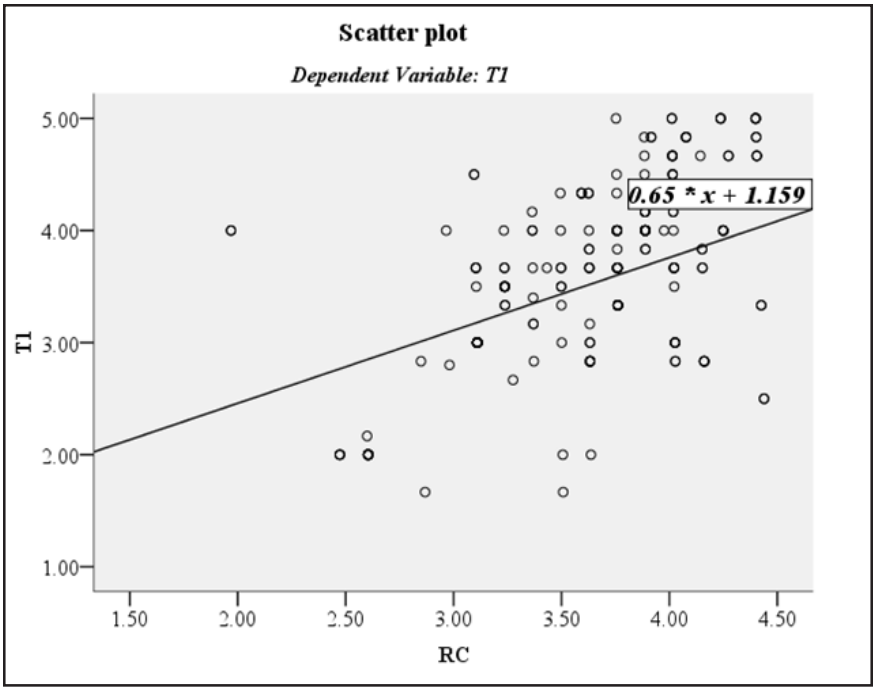

Figure 1. Scatter Plot Depicting the Relation between Role Change and Performance at the Pre Teaching Stage
Source: Field Survey, 2014

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.65	0.52	0.51	0.41

Table 4. Relationship between Role Change of Lecturers and their Performance at the Teaching Stage
Model Summary

A second model is developed to establish a relationship between lecturer's performance at the teaching stage and role change. The correlation coefficient, (R) of 0.65 in Table 4, shows that there is quite a strong relationship between the performance of lecturers at the teaching stage and role change. Furthermore, Table 4 shows that 52% (coefficient of variation) of the variation in the performance at the teaching stage can be explained by the variation in the change in role of lecturers, depicting that role change has done little or has not done much to lecturers' performance at the teaching stage.

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	32.83	1.00	32.83	148.85	0.000
Residual	45.88	208.00	0.22		
Total	78.71	209.00			

Source: Field Survey, 2014

Table 5. Anova Table showing Type of Relation between Role Change and Lecturers Performance at the Teaching Stage

With the significant value of 0.000 the null hypothesis which states that there is no relationship between lecturers' role change and their performance at the teaching stage is rejected, confirming that there is a positive relationship between the variables role change and performance measured at the teaching stage.

Regression Coefficients

	B	Std. Error	t	Sig.
(Constant)	1.93	0.16	12.04	0.000
Role change	0.50	0.04	12.20	0.000

Source: Field Survey, 2014

Table 6. Determination of the linear Regression Equation between Role Change and Lecturers Performance at the Teaching Stage

From Table 6 above, the significant value of 0.000 depicts that lecturers performance at the teaching stage is positively affected by their change in role. A model equation, equation 2 is thereforedeveloped.

$$T2 = 1.193 + 0.50\,RC \qquad (2)$$

In equation 2 above,

"***T2***" represents performance of lecturers at the teaching stage.

"RC" represents role change of lecturers at the teaching stage of teaching

From equation 2, the constant value of ***1.93*** is the rate of performance at the teaching stage when there is no change in lecturer's roles. The positive coefficient of ***0.50*** shown in equation 2 means that any slight change in lecturer's role would increase their performance at this stage by 0.50. Figure 2below, is a scatter plot diagram showing the relationship between lecturers' role change and their performance at the teaching stage. The plot shows a strong positive association between the two variables with an upward trend line meaning that a slight increase in role change of lecturers will also increase their performance at this stage.

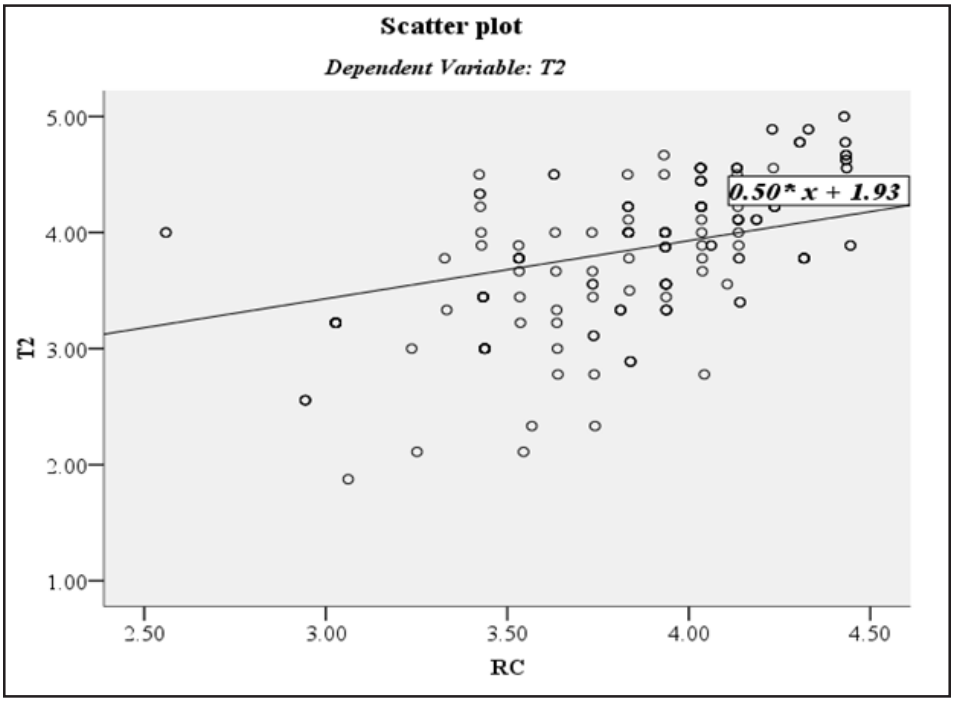

Figure 2. Scatter Plot Depicting the Relation between Role Change and Performance at the Teaching Stage

Source: Field Survey, 2014

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.02	0.03	0.032	0.52

Table 7. Relationship between Role Change on Lecturers Performance at the Post-Teaching Stage

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	28.71	1.00	28.71	107.16	0.94
Residual	52.25	195.00	0.27		
Total	80.96	196.00			

Source: Field Survey, 2014

Table 8. Anova Table

The last aspect of this section of the analysis is assessing whether there is a relationship between lecturer's performance at the post teaching stage and role change. The correlation coefficient (R) of 0.02 from Table 7 shows that there is no relationship between the performance of lecturers at the post-teaching stage and their change in role. Also, only 3% of the change in the performance of lecturers at this stage (post –teaching) stagecan be explained by the variation in their role change depicting that role change has no effect on performance at this stage. At a significant value of 0.94 shown in Table 8,we accept the null hypothesis which states that there is no relationship between lecturers' role change and their performance at the post-teaching stage. This provides enough confidence that there is no relationship between the variables role change and performance at the post-teaching stage. This means that there has been no change in the role played by lecturers at this stage of teaching. This also depicts that the way by which lecturers assessed their students remains the same despite the adoption of e-learning. In other words, there is no change in the way lecturers assess their students at this stage.

8. Conclusions and Recommendations

The recent transformation in education due to e-learning as well as the change in role of lecturers due to e-learning, places the responsibility on lecturers not only to embrace the use of e-learning but to understand the effect of e-learning on their performance at the pre-teaching, teaching and post –teaching stages. The study of the relationship between lecturers' role change and performance at the pre-teaching, teaching and post –teaching stages due to e-learning becomes indispensable to e-learning implementation plans.

The research revealed a strong relationship between the independent variables (overall role change) and the dependent variable (lecturer performance at pre-teaching stage), a strong relationship between the performance of lecturers at the teaching stage and role change was also observed. There is however no relationship between the performance of lecturers at the post-teaching stage and role change.

The findings of this study, though specific to Universities in Ghana has implications that are significant to other lecturers as well. The positive relationship between lecturers' role change and performance at the pre-teaching and post- teaching stages is of great significance to the nation as most universities embrace the use of e-learning. It is therefore important that universities speed up the process of e-learning adoption which will lead to the change in role of their faculty, culminating in improved performance.

The study did not focus on lecturers' in the pure sciences such as Physics, Chemistry, Biology and other areas with laboratory experiences. It is therefore recommended that further research should investigate the relationship between lecturers' role change and performance at the pre-teaching, teaching and post-teaching stages during e-learning using lecturers in the pure science discipline. It is also recommended that further research should investigate factors that affect role change of lecturers. In

addition, the effect of the change in roles of lecturers on students' work as well as students' performance was not considered in this research. Further research can be done in these areas.

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