Teacher evaluation of the Principal's leadership characteristics related to computer studies implementation in Rongo District, Kenya

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ABSTRACT

The purpose of this study was to evaluate the principal's leadership characteristics related to computer studies implementation in selected secondary schools in Rongo district, Kenya. The study investigated the principal's computer proficiency and attitude towards the computer studies in their schools. This study adopted a comparative descriptive research design which compared the variables influencing the implementation of computer studies in schools that were teaching computer studies and those that were not. Twelve selected secondary schools participated in this study of which six (6) had implemented and six (6) had not implemented computer studies. One hundred and forty three (143) teachers sampled from the 12 secondary schools took part in the principals' evaluation. The data for the study was collected using questionnaires and were subsequently analyzed using both descriptive and inferential statistics. The analyzed data was presented in form of tables. It was then interpreted and findings were highlighted. The teachers of the schools that have not implemented computer studies have higher evaluation of the risk-taking leadership characteristics of their Principals than the teachers of the schools which have implemented computer studies. However, the Principals of both schools have similar teacher evaluation of their computer proficiency and attitude toward computer studies. These findings imply that computer studies implementation in secondary schools does not necessarily depend on leadership or personal characteristics. Possible further research areas related to technology leadership are suggested: the influence of contextual factors on leadership, technology leadership as viewed from perspectives of different stakeholders, and relationships among various leadership factors.

Keywords: Teacher; Evaluation; Principal; Computer studies; Implementation, computer proficiency, attitude, risk-taking.

INTRODUCTION

Since 1980, integration of Information Communication Technology (ICT) in education has been compulsory in the developed nations, but in the developing nations like Kenya, ICT integration in education is considerably new, small scale and experimental in nature (GOK, 2005). Access to computer facilities is still one of the major challenges in Africa and Kenya in particular. While the ratio of one computer to fifteen students is the norm in most developed countries, the ratio in Africa stood at 1 to 150 students (GOK, 2005). In Kenya, the ratio is 1 computer to 120 students at secondary level (GOK, (MOEST) and Kenya Education sector Support Project - KESSP, 2006).

According to National Alliance Rainbow Coalition (NARC) party election manifesto of 2002, the government pledged a provision of free primary education for all Kenyan children which kicked off in January 2003. While overwhelming challenges in primary schools have overstretched the meagre resources in these schools, the problem was compounded further in 2008 when the Government of Kenya (GOK) came up with the partial free secondary education. This placed more demands on the government and the administration of secondary schools in the

implementation of computer studies, most of which have few established computer laboratories and inadequate staff to manage the program at the examination level.

The government is keen to utilise ICT and other resources to increase access to education for all Kenyans. The following background was necessary as key policy on ICTs. For example, in March 2004, the government funded the design and development of the e-government strategy to provide a common framework and direction across the public schools and all other sectors. The policy was intended to enhance collaboration within and among government institutions as well as between the business community and the citizens of Kenya in regard to the development and implementation of ICT. The ICT policy (GOK, 2005) indicated that standards would be developed for hardware, software, and training requirements which considered the use of refurbished computers in schools and provided additional guidance as appropriate.

Further, in the 9th May 2006 draft, KESSP and MOEST indicate that:
> *The government appreciates and recognises that an ICT literate workforce is the foundation on which Kenya can acquire the status of a knowledge economy. Against this background, the government intends to make education the natural platform for equipping the nation with ICT skills in order to create a dynamic and sustainable economic growth. (P.105)*

The government has therefore formulated a national information and communication technology policy. In line with this policy, the government developed a strategic plan for ICT (e-government) thus paving the way for widespread use of ICT in government offices. It is from this policy background that the education and training sector requires school principals to play a major role in the implementation of the proposed ICT policy. Successful introduction and use of ICT in education and training institutions will play a critical role in disseminating skills to a wider society, thus creating a positive impact in the economy. Further, GOK policy number 6 and 7 seek to put in place a national strategy on ICT that can provide guidance to the sector on infrastructure and capacity building. The policy stresses the need for a multi-sectoral approach on the development of ICT strategies (GOK, MOEST, 2005). It is upon this background that many institutions started offering computer studies as a subject in secondary schools.

In 1998, the curriculum developer, Kenya Institute of Education, (K.I.E), produced the first syllabus that included Computer Studies as an examinable subject in secondary schools. Putting up computer facilities in schools is capital intensive and often times requires the participation of other stakeholders for tangible results to be realized. The principals are therefore presented with the challenge of networking and mobilizing the required resources for a successful implementation. Administratively, school principals should develop a project implementation plan by using project management software, establishing a schedule and monitoring implementation progress. The principal is also meant to verify that the system works by testing hardware and software, testing integration, testing performance and testing the software interface (Thomas 1999; Makewa, 2010). This study, therefore, purposed to evaluate the principal's leadership characteristics related to computer studies implementation in Rongo district of Kenya.

By all means, school principals occupy a strategic position in the educational system- a position whose importance revolves around the fact that it is concerned with the total functioning of the school. Aquino (1999) defines a school administrator as all persons occupying policy implementing positions having to do with the functions of the school at all Levels. Therefore, it is the administrative duty of the school principal to discharge his or her responsibilities in accordance with the philosophy, goals and objectives of the school as regards the implementation of Computer Studies.

Implementation of Computer Studies in secondary schools is a matter of great concern because it poses a considerable challenge to the Kenya Vision 2030 and this will certainly hamper and slow down economic development (Vision 2030, 2007). The information gathered from the D.E.O's office, Rongo, on Computer Studies implementation, shows that most schools experience a number of challenges as indicated in Table 1.

Table 1: *Sample population showing the ratio between students taking computer and available computers*

Division	No of Schools	School offering computer studies	No. of Students	Student taking Computer Studies	No. of Computers	No. of computer Teachers
Uriri	13	3	3100	200	25	10
Rongo	17	6	3600	600	100	12
Awendo	12	4	2900	500	70	8
Total	42	13	9600	1200	195	30

Source: DEO's office Rongo, 2008

The Government intends to make education the natural platform for equipping the nation with ICT skills in order to create a dynamic and sustainable economic growth (KESSP and MOEST, 2006). The implementation of computer studies in secondary schools is a matter of great concern because it poses a considerable challenge to the Kenya 2030 vision (Kenya should be fully industrialized by the year 2030) (Government of Kenya, 2007). Out of forty-two (42) secondary schools in Rongo District, only thirteen (13) schools offer computer studies (Government of Kenya, 2007).

Effective school administrators are keys to large-scale, sustainable education reform. Rapid changes in technology have led to new possible ways for managing and leading schools. Leadership within the context of these changes becomes crucial agenda among school leaders all over the world. Technology leadership is seen as the relationship between leadership and technology, whereupon the administrators must play a more proactive role in implementing technology. In the modern information explosion environment, technology education becomes increasingly vital day by day, and principals with efficient technology leadership skills are the key to successful policies and technology education plans (Chang, 2004; Chang & Tseng, 2005). Other body of literature indicates that the principal's leadership characteristics play a major role in facilitating and fostering friendly environment that is conducive for establishing and implementing computer implementation (Bridges, 2003; Hughes & Zachariah, 2001; ISTE, 2005; Akababa-Altun, 2001; Stegall, 1998; Ridel, et al, 1998).

Secondary school principals are key to the development and successful implementation of institutional programmes (Zammit 2004). Strong leadership in an educational setting means that school principals and other school leaders must play a leading role in the change process (Payne, 2000; Wallace, et al, 2007). Stressing on the importance of leadership in the exercise of computer implementation, Anderson and Dexter, (2005) in an empirical investigation of prevalence and effects of school technology leadership, concluded that although technology infrastructure is important for educational technology to become an integral part of a school, technology leadership is even more necessary. The principal is the school's financial controller and facilitator of all school projects (Okumbe 1999). The principal is concerned with the cost of education, sources of income to meet the educational cost and the spending of the income in an objective manner in order to achieve the educational objective. Bosche et al (1993) speak of school principal's task as to mobilize community awareness and support by involving them for

computer technology changes. School leaders also play an important role in providing an infrastructure that is conducive to the use of educational technologies. Technology infrastructure includes hardware, software, and resources (Yee, 2000)

METHODOLOGY

This study used a comparative descriptive research design in order to describe and compare the leadership and personal characteristics of principals based on the teacher evaluation. The study investigated the risk-taking leadership characteristics, computer proficiency, and attitudes toward computer studies of the principals of schools that have implemented computer studies and the principals of schools that have not implemented computer studies for purposes of comparison and to identify whether leadership and personal characteristics influence computer studies implementation in secondary schools.

A researcher-constructed questionnaire was designed to solicit information on the administrative variable(s) affecting the implementation of computer studies in selected secondary schools. The questionnaire consisted of closed or fixed-alternative and open-ended questions (Neuman, 2000). Content validation using expert judgment and sensible methods of questionnaire construction was done to make sure that the questionnaire consisted of adequate and representative collection of items that measure the principal's risk-taking leadership characteristics, attitude toward computer studies, and computer proficiency. To establish the reliability of the questionnaire, a pilot study was done in four secondary schools in Central Kisii District. Cronbach's reliability coefficients for the different components of the questionnaire were found to be 0.658 and higher, greater than the acceptable reliability coefficient in the social sciences which is 0.60 (Cronbach, 1984; Thorndike, 1997b)

The study population comprised all 42 secondary schools in Rongo District. The sample included twelve selected secondary schools of which six (6) had implemented and six (6) had not implemented computer studies. The sample consisted three categories of schools: girls' secondary schools, mixed secondary schools, and boys' secondary schools. Also, the targeted secondary schools included public and private boarding and day schools.

The schools were stratified into boys' boarding schools offering computer studies, boys' boarding schools not offering computer studies, girls' boarding schools offering computer studies, girls' boarding schools not offering computer studies, mixed/day and boarding schools offering computer studies and mixed/day and boarding schools not offering computer studies. From each stratum, a number was given to each school, the numbers were put into the container and the first two selected schools were included in the sample. This was repeated in all the strata of the schools. The stratified and simple random sampling methods were used allow generalization of results (Creswell, 2008).

All the teachers in each selected school were asked to evaluate the principals. A sample of one hundred forty three (143) teachers of secondary schools in Rongo District participated in this study, 86 teachers from schools which have implemented computers studies and 57 teachers from those that have not implemented.

Statistical Treatment of Data

Data was analyzed using descriptive and inferential statistics. T-test was used to determine differences in responses of teachers of the schools which had implemented computer studies and those which had not.

RESULTS AND DISCUSSION

This study purposed to examine if there was significant difference between the teachers' evaluation of principals of schools that had implemented computer studies and those that had not, in terms of the following variables: Principal's risk-taking leadership characteristics, Computer proficiency and Attitude towards computer studies

Risk-taking Leadership Characteristics

Table 2 shows the mean evaluation of the principals on risk taking leadership, that is, for the schools that implemented and had not implemented computer studies.

Table 2: *Risk taking group statistics*

Respondent category		N	Mean	Std. deviation	Std. Error Mean
Risk taking	Implemented	86	2.63	0.65	0.070
	Not implemented	57	2.95	0.71	0.093

 The mean for risk taking characteristics of principals of schools that had implemented computer studies was 2.63, while the mean for the principals whose schools had not implemented computer studies was 2.95, with a mean difference of 0.32. To determine whether the difference was significant, an independent samples t-test was done, the result of which is shown in table 3.

Table 3: *Independent Samples T-test on Risk taking Leadership Characteristics*

		Levene's test					
		F	Sig	T	Df	Sig 2-tailed	Mean difference
Risk taking	Equal variance assumed	1.214	0.272	-2.820	141	0.005	-0.32342
	Equal variance not assumed			-2.772	112.96	0.007	-0.32342

* The mean difference is significant at the 0.05 level

Table 3 indicates that the variances of the two groups were homogenous as shown by the p-value of 0.272 in the Levene's test of equality of variances, which is greater than the 0.05 level of significance. The exact probability that the difference between principals who had implemented and those who had not implemented in terms of being risk takers happened by chance was 0.005, which was less than the level of significance (0.05), therefore, the difference was considered significant. The null hypothesis that there was no significant difference in those

principals who had implemented computer studies and those who had not implemented in regard to being risk takers was therefore rejected. This meant that the principals of the schools that had not implemented computer studies had been evaluated by the teachers higher than those who had implemented computer studies, in terms of risk taking characteristics. To get a better picture of these differences in teachers' evaluation, the comparison of the mean evaluation of each item for risk taking leadership characteristics is shown in table 4.

There were four items where the teachers of the schools which had not implemented computer studies evaluated their principals averagely than the teachers of the schools which had implemented. These were: willing to risk their reputation for the future benefit of the school, to take risk on opportunity that will improve the school, provide stimulus needed for change, and provide the staff with opportunities to consider and implement curriculum changes.   The principals of schools which had implemented computer studies seemed not to be risk takers in displaying these characteristics since they already had computer studies in their schools. The principals who were still to implement computer studies encouraged others to be risk takers and create an environment that is safe for risk taking. These findings seem to contradict the idea that risk takers always initiate new programs (Teske, 1999; SEDL, 2010; Crownson, 1989; Joiner,1987; Mazzarella and Grundy, 1989). This may be due to the tendency of those who have accomplished their goals to decline in effectiveness following the *law of diminishing returns*.

Table 4: *Teachers' evaluation of principals on risk taking leadership characteristic*

		Implemented		Not Implemented	
Leadership Characteristics		Mean	(SD)	Mean	(SD)
Risk taking	Am willing to risk my reputation for the future benefit of the school	2.56	1.07	3.04	1.07
	Take risks on opportunities that will improve the school	2.66	0.90	3.21	0.88
	Provide needed stimulus for change	2.70	1.95	3.16	1.00
	Encourage others to be risk takers	2.47	0.90	2.83	1.00
	Create an environment that is safe for risk taking	2.42	0.94	2.75	1.00
	Provide the staff with opportunities to consider and implement curriculum changes	2.88	1.01	3.16	0.88
	Only stretch rules for the benefit of the school	2.77	0.95	2.98	1.08
	Alleviates fears and uncertainties associated with change	2.56	1.00	2.74	1.04
	Risk taking	2.63	0.65	2.95	0.71

Computer Proficiency

Table 5 shows the teachers' mean evaluation of the principals on computer proficiency, for those schools that had implemented and those which had not implemented computer studies.

Table 5: *Computer Proficiency Group statistics*

Respondent category		N	Mean	Std. deviation	Std.Error Mean
Proficiency	Implemented	86	2.71	0.88	0.095

	Not implemented	57	2.42	1.07	0.14

The mean for computer proficiency of principals in schools that had implemented, 2.71, was greater than that of the schools which had not implemented computer studies, 2.42, with a mean difference of 0.29.

Table 6 shows the computer proficiency characteristics independent sample t-test.
The analysis indicated that the variances of the two groups were homogenous as shown by the p-value of 0.055, which was greater than the 0.05 level of significance.

Table 6: *Independent Samples T-test on Computer Proficiency*

		Levene's test						
		F	Sig	T	Df	Sig 2-tailed	Mean Diff	Std. Error
Proficiency	Equal variance assumed	3.747	0.055	1.726	141	0.086	0.28374	0.16435
	Equal variance not assumed			1.660	103.73	0.100	0.28374	0.17096

The exact probability that the difference between principals whose schools had implemented and those whose schools had not implemented in terms of being proficient users of computers happened by chance was 0.086, which was greater than the level of significance of 0.05, therefore, the difference is considered not significant. The null hypothesis that there is no significant difference in those principals who had implemented computer studies and those who had not implemented in regard to being proficient users is therefore accepted. This means that the principals whose schools had not implemented computer studies and those who had implemented computer studies had been evaluated by the teachers as having similar level of proficiency in computers.

Both groups of principals have a low level of computer proficiency. These findings support what Witten and Richardson (1991) found that the majority of the principals had little information about the use of computer in managing their schools and recommended a full scale training program for school principals. This would seem to suggest that principals in the study region are largely ignorant in the use of computers and therefore proficiency in use of computers had no bearing on implementation.

Attitude towards Computer Studies

Table 7 shows the mean evaluation of the principals on attitude towards computer studies for the schools which had implemented and those which had not implemented computer studies.

Table 7: *Attitude group statistics*

Respondent category		N	Mean	Std. deviation	Std.Error Mean
Attitude	Implemented	86	2.98	0.64	0.070
	Not implemented	57	3.11	0.60	0.079

The mean (2.98) for attitude of principals in schools that had implemented was less than the mean (3.11) of the principals of schools that had not implemented computer studies with a mean difference of 0.13.

Table 8 indicates that the variances of the two groups were homogenous as shown by the p-value of 0.314, which is greater than the 0.05 level of significance. The exact probability that the difference between the attitude toward computer studies of principals whose schools had implemented and those whose schools had not implemented happened by chance was 0.233, which was greater than the level of significance (0.05), therefore, the difference was considered not significant. The null hypothesis that there is no significant difference in the attitude of those principals whose schools had implemented computer studies and those whose schools had not implemented was accepted. This meant that the principals of the schools which had not implemented computer studies had been evaluated by the teachers equally as those who had implemented computer studies, in terms of attitude toward computer studies.

Table 8: *Independent Samples T-test on Attitude toward Computer Studies*

		Levene's test						
		F	Sig	T	Df	Sig 2-tailed	Mean Diff	Std. Error
Attitude	Equal variance assumed	1.020	0.314	-1.197	141	0.233	-0.12757	0.10656
	Equal variance not assumed			-1.216	126.33	0.226	-0.12757	0.10490

This disagrees with the finding of (Serhan, 2007) who has argued that the principals who had positive attitudes toward the use of technology in teaching were willing to support the implementation of computer studies in their schools. Although all the principals had a positive attitude toward computer implementation, not all of them were able to implement computer studies. This implies that positive attitude toward computer studies is not enough to warrant implementation of computer studies in secondary schools. There are other crucial factors such

as lack of computer laboratories, computer hardware, and software that must be taken into account.

CONCLUSION

The teachers of the schools that have not implemented computer studies have higher evaluation of the risk-taking leadership characteristics of their Principals than the teachers of the schools which have implemented computer studies. However, the Principals of both schools have similar teacher evaluation of their computer proficiency and attitude toward computer studies. These findings imply that computer studies implementation in secondary schools does not necessarily depend on leadership or personal characteristics.

The principals of schools that implemented computer studies have declined in their demonstration of risk-taking leadership characteristics and this may pose a danger to the sustainability of the computer implementation. It is therefore recommended that school principals be sensitized to continue to improve in their computer proficiency, display their risk-taking leadership characteristics to inspire their constituents, and be more positive in their attitude and aggressive in performing their role in implementing computer studies in their respective schools. Possible research areas related to technology leadership are suggested: the influence of contextual factors on leadership, technology leadership as viewed from perspectives of different stakeholders, and relationships among various leadership factors.

REFERENCES

Akababa-Altun, S. (2001, September). *Elementary School Principals' Attitude Towards Technology and Their Computer Experience.* Paper Presented at the World Congress on Computational Intelligence (WCCI) Triennial World Conference, Madrid, Spain. (ERIC Document Reproduction Service No. ED 477 708).

Anderson, R. and Dexter, S. (2005). School Technology Leadership: An Empirical Investigation of Prevalence and Effect. *Educational Administration Quarterly, 41*(1), 49-82.

Aquino, V.G. (1999). *Educational administration: Theory and Practice.* Manila: Rex Bookstore.

Bosche F., Whitehead B.M., and Bosche M.A. (1993). *Effective Reading Programs: The Administrator's Role.*

Bridges, J. W .(2003). Principals Influence: Sustaining a Vision for Powerful New Forms of Learning Using Technology (Doctoral Dissertation, University of California, Los Angeles). *Dissertation Abstracts International, 64*(6), 1915.

Chang, I., & Tseng., D. (2005). The Development of Technology Leadership Academies in the USA and from which some Implications for School Administration in Taiwan. *Journal of the National Institute for Complications and Translation, 33*(3). 83-95.

Chang, I.H., Chin, J. M., & Hsu, C. M. (2008). Teachers' Perceptions of the Dimensions and Implementation of Technology Leadership of Principals in Taiwanese Elementary Schools. *Educational Technology & Society, 11* (4), 229-245.

Creswell, J. W. (2008). Educational Research: *Planning, Conducting, and Evaluating Quantitative and Qualitative Research.* New Jersey: Pearson, Merrill Prentice Hall.

Cronbach, L. J. (1984). *Essentials of Psychological Testing*. New York: Harper & Row.

Crownson,R.L.,(1989).Managerial ethics in educational administration: *The Rational choice Approach. Urban Education, 23*(4),412-435

Government of Kenya (2005). *Ministry of Education KNEC Complete Syllabus and Examination Schedule for ICT*- Nairobi. Government Printers.

Government of Kenya (2007). *Ministry of Education: Rongo District Education:* Rongo: Annual report.

Hughes, M. & Zachariah, S. (2001). *An Investigation into the Relationship between Effective Administrative Leadership Styles and the Use of Technology*: Retrieved April 3, 2011 from http://www.ucalgary.ca/~iejll/volume5/hughes.html.

ISTE, (2005). *Educational Technology Standards and Performance Indicators for Administrators*. Retrieved April 3, 2011 from http://cnets.iste.org/administrators/a_stands.html.

Joiner Jr.,C.W.(1987).*Leadership for change* .Cambridge. MA: Ballinger Publishing Company.

KESSP and MOEST (2006). *Kenya Education Sector Support Programme*. *KESSP 2005 – 2010*.

Makewa, L. (2010). *Handbook for Planning Technology Initiative.* New York: Lulu Press*.*

Mazzarella,J.A.&Grundy,T (1989).Portrait of a leader in S.C. Smith& P.K.Piele (Eds.) ,School Leadership: *Handbook for Excellence*, second Edition.(pp.28-52).Office of Educational Research and Improvement, Washington, DC:OERI contract OERI-R-86-0003.

Neuman, W. L. (2000). *Social Research Methods: Qualitative and Quantitative Approaches*. Boston: Allyn & Bacon.

Okumbe, J. O. (1999). *Educational management: Theory and Practice*, Nairobi: Nairobi University Press.

Payne, D. (2000). Teacher Professional Development: The Principal's Critical Role. *NASSP Bulletin, 84* (618), 13-21.

Ridel, R., Smith, T., Ware, A., Wark, A., & Yount, P. (1998, March*). Leadership for Technology Rich Educational Environment*. Paper Presented at the Society for Information Technology and Teacher Education International Conference, Washington, D.C. (ERIC Document Reproduction Service No. ED 421 128).

SEDL (2010) Leadership Characteristics that Facilitate School Change. *Advancing Research, Improving Education*. Retrieved April 25, 2010, from http://www.sedl.org/change/leadership/character.html

Serhan, D.(2007). School principals' attitudes towards the use of technology: United Arab Emirates technology workshop. *The Turkish Online Journal of Educational Technology – TOJET April 2007 ISSN: 1303-6521 volume 6 Issue 2 Article 5.*Retrieved April 18, 2010 from http://www.tojet.net/articles/625.pdf

Stegall, P. (1998). The Principal – *Key to Technology Implementation*. Paper Presented at the Annual Meeting of the National Catholic Education Association, Los Angeles, CA. (ERIC Document Production Service No. ED 029 213).

Teske, P. E. (1999). *The Importance of Leadership: The Role of School Principals*. State University of New York at Stony Brook Mark Schneider.

Thomas, W. R. (1999). Educational Technology: *Are School Administrators Ready for It?* Southern Regional Educational Board, GA. (ERIC Document Reproduction Service No. ED 459 690)

Thorndike, R. M. (1997b). *Measurement and Evaluation in Psychology and Education*. Upper Saddle River, NJ: Macmillan/Prentice Hall.

Vision 2030. (2007). *Government of Kenya Vision 2030.*

Wallace, F., Blasé, K., Fixsen, D., Naoom, S. (2007). Implementation: *Understanding the Design*.

Witten, D.W. & Richardson, M. D. (1991). Administrative computer use by secondary principals. *Journal of Research on Computing in Education, 23* (4), 586-592.

Yee, D. L., (2000). Images of School Principals' Information and Communication *Technology Leadership. Technology, Pedagogy and Education, 9*(3), 287-302.

Zammit, L. (2004). *ICT Literacy and Education in Malta, Rising to the Challenges*. Malta. Lisbon.