EFFECT OF BLENDED LEARNING ON LEARNERS' ACADEMIC PERFORMANCE: CASE OF GICUMBI DISTRICT (2015/2020)

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Abstract

The purpose of this study was to investigate the effect of blended learning on learners' academic performance in Rwandan public boarding schools. Case of Gicumbi district. The researcher targeted all the 12 public boarding schools from Gicumbi district, 4 public boarding schools were selected basing on the assumption of (Borg and Gall, 2003) indicating that at least 30 percent of the entire population for sample is sufficient. The study population comprises 1334 as total population. And final sample size were 308 people who were selected using Yamane sample size determination. The study approved that blended learning affect learner's academic performance in Rwandan public boarding schools. And government is recommended to supervision on the use of ICT in Rwandan public boarding schools.
Keywords: *blended learning and learners' academic performance.*

According to Potashnik and Capper (1998), radios and television have been considered in past years. As means of communication in teaching and learning activities even if they use to utilize hard materials or printed one which remained most affordable and accessible in both countries, developed countries and less countries. But the use of computers and the internet in education is still at low level in African less developed countries and all other international less developed countries. This is a very big problem for developing countries to fit themselves into the global economy while development of technology is still low. Moreover, this affects the quality of education of those countries (Altbach, 2005).

Students continued to improve skills and knowledge on computers by playing games and following the instructional on the computer. Teachers started writing in words but later the students write too. In 1980s modern internet also was introduced, from that time-sharing information was easy for both sides and learning materials were also on the internet, globally communication becomes easy. The teachers became aware of how computers transformed the education system into a conducive environment since the students started presenting their works using it and access ideas and knowledge from it. And it was revealed that learners perform better when they are using modern method instead of the traditional one (Jena, 2013).

Globalization and technology were empowered over the last 15 years. This world is led by technology, guided by speed information sharing and knowledge (Ølnes, Ubacht & Janssen, 2017). All of these are being done with the target of

establishing a global economy. This change has a serious implication on how education should be. It is the reason why educational institution is establishing the use of ICT in education (Ølnes, Ubacht & Janssen, 2017). Global concern in education and quality of education is being made by different countries for expanding education to the people who was made vulnerable by globalization. Generally, in less developed countries some people are vulnerable as the results of globalization and implementation of ICT, those people who are in rural areas such as girls, unskilled labors, old people, some graduates from ancient period and women. This global reformation is putting them under pressure to harmonize themselves with new skills and information spreading (Benería, Berik & Floro, 2015).

In Africa majority of the countries are less developed, number of countries that use technology is still low but they are developing ICT as a tool for socio-economic development. Many countries are using technology in teaching but there is a great problem of lack of financial means that can help them to achieve their target in short period of time (Sife, Lwoga & Sanga, 2007). But the journey is still long because many families in Africa are poor so they cannot afford the price of buying electronic devices like computers, radio, telephones even internet networks. And this is among the challenge of establishing smart class because it can be very easy when homes learners used to use those materials and their respective teachers but the teachers do not know how to use the computers, projectors and other electronic devices (Sife, Lwoga & Sanga, 2007). In addition to that, some families and schools do not have electricity or another alternative source of power. So it is not easy to establish a smart class that can help the school to develop ICT in teaching and learning in those areas. The establishment of smart classroom does not mean eliminating all the old ways of teaching by new ones but it is like integration (Anju & Sharma, 2016).

Education is considered as a motor for economic development and industrial development (Benavot, 1992). In third world countries, the teachers are still using an analog system of teaching using chalkboards. By using ICT the education in any given country can be successful enough, teachers could use ICT materials to make education understandable for everyone because teaching and learning become semi-practical or practical. Currently, instructors' academic performance is not measured by academic achievement only but by the way, teachers use ICT tools to achieve the main objective. The use of ICT or technology can be a chance to support the learners with special education needs because they are technological methodology that was designed to help disabled learners. As ICT and computer, learners can stay home and attend the schools, even those with sight or blind problems ICT integrate them by using special machines that are very useful to them (Shamatha, Peressini&Meymaris, 2004).

Research question

What are the effect of blended learning on learner's academic performance in Rwandan public boarding schools?

Understanding the key concepts

This part explains the major terms and concepts which was used in the research project by referring to others scholars who examined and discussed those concepts in their research. They are namely: smart learning, students' performance and boarding school.

Smart learning in education perspective

According to Dey & Bandyopadhyay (2019). "Smart learning is modern methods that contribute in providing quality education to the learners for improved learning achievement with the assistance of technology. Traditional methods are losing their effectiveness as all the educational institutions are adapting smart classrooms in their teaching and learning program. Smart classrooms are well equipped educational environment with the latest technology such as visualizers, smart boards, laptops/computers, internet connectivity, projectors, amplifiers, speakers, podium, microphones and many more" (p.23)

According to Yekimov et al (2020) "Smart Classroom project explores the challenges and potentials of the Intelligent Environment as a new human-computer interaction paradigm. By constructing an intelligent classroom for e-learning, we try to provide teachers the same experiences as in an ordinary classroom when giving online lessons" (p.4) and they further continued with the following definitions "A smart classroom relates to the optimization of teaching content presentation, convenient access of learning resources, deeply interactivity of teaching and learning, contextual awareness and detection, classroom layout and management, etc. It may be summarized as Showing, Manageable, Accessible, Real-time Interactive and Testing, which is nicknamed "S.M.A.R.T".

Technology plays significant role in the life of human being but in education facilitate communication. Currently, computers are contributing to our education system. The term smart classroom is new movement that was introduced in teaching and learning so that learners can study using technology. The new world is forced to introduce smart classes which can provide education better through a presentation, research and online learning. Many researchers Pishva & Nishantha (2008) asserted that smart classrooms and adoption of internet in education system are improving and developing our methods of schooling, in the same manner that technology such as radio, TV, telephone specifically have changed our mode of communication.

Nowadays, the internet is becoming an important instrument utilized by college students to develop their academic performance. Traditional mode of teaching which consists of face to face teaching and learning, using hard books, using libraries has reduced values as a result of internet connection (Yang, Pan, Zhou & Huang, 2018). Internet is facilitating easily the students to study effectively

and efficiently at low prices because it is very cheap comparing with accessing hard books (Watters, Keefer, Kloosterman, Summerfeldt & Parker, 2013).

The smart concept is defined as a set of well-explained devices and instruments or aims. (Taleb & Hassanzadeh, 2015). A smart classroom is a technological-based learning and teaching source which is spreading around the world and enhance learners to study with the support of device hardware, software, and other electronic sources. A smart classroom is explained as one of the cheapest sources of information that might be utilized to shift from traditional education system to modern one with support of new technology. For the students' smart classrooms is a mode of generating quality of education because learners can even make their self-teaching without the intervention of teachers by making research and making online learning. Smart classroom uses laptops, projectors, tablets, multi-screens and other electronic devices. For effective teaching and learning.

Boarding schools in education perspective

Boarding school is an educational institution that has basic target of behavior development. Boarding schools its main education objective is more likely to generate a conducive education environment which facilitates teaching and learning and produce graduates of citizens who bring change in socio-economic, religious development of country (Rizkiani, 2017). The concept of boarding school is somehow confusing because some scholars explained and analyze its advantage differently. According to Hendriyenti (2014) indicated that many schools and educational institutions can recognize and develop the objectives and importance of country education by putting into practice character education. One of character education is boarding school, Islamic schools school management and integrated school. The most important school management that brings character improvement is boarding schools. While day schools take students in charge on daily basis only and they return to their home or rented house at the end of the day.

According to (Khalidy, 2014) learners who conduct their learning in boarding school are well managed and their behavior, activities, attitudes and values are controlled. They receive a sense of togetherness because always they are together with their patron, matron and other administrative staff. Hence the concept of boarding schools is an educational institution where students learn under the supervision of their instructors and administrative staff without daily returning home, means that they are supposed to stay at school till the end of term or semester.

Academic performance

Academic performance is the measurement of learners' achievement across many school subjects. Instructors and administrative staffs typically detect achievement using classroom achievement, grading rates and outcome from standardized tests. According to Mushtaq and Khan (2012) academic performance is an indicator of successful education system of any given country. Policies, curriculum and program which are designed to rise education,

are measured basing on the students' academic performance and their competition at the job market. Academic performance is a degree of success that students manifest at end of any session but academic performance goes hand in hand with the program that government designs. For Instance, introduction of smart classroom, school feeding program. Academic performance means the outcome of education and schools' effort in teaching the students.

According to Ali et al (2009) asserted that learners' academic performance has significant importance in generating the best quality of school leavers who will be the future leaders and labors of the nation and become responsible for socio-economic development. Learners academic performance does not only reflect the work of administrative and teaching staffs but also competition at national, regional and international market, Simply means labor markets. Academic performance is the major factor which most likely to be considered by the companies while they are recruiting new employees especially from new graduates. Learners must use most their effort in studying so that they can earn high grades which lead them to be an eligible candidates to the labor markets. The learners' academic performance is graded using the Cumulative Grade Point Average (CGPA) which is an international grading system of higher institutions. CGPA gives value to all examinations that students pass academically in most of the semesters and brings the final average of those marks. Hence shows the overall academic achievement of the students (Yogendra & Andrew, 2017).

According to Seetha (2013) indicated smart class helps in time management and the researcher continued by stating that through this type of learning, the students are involved and motivated in teaching and learning activities because in smart class there is a use of audio-visual tools that are very interested in the learners' wishes. Many different research which was made, revealed that smartboard encourages active learning in any given class and in addition to that it produces a successful academic performance since the learners put more effort in being a part of lesson. In the study conducted by Hall and Higgins (2005) about the effect of an interactive whiteboard on learners' academic performance and researchers indicated that there is a link between interactive whiteboard and learners' involvement, paying attention to the content. Motivation of learners rise during the content delivering, hence both the learners and teachers stand for the use of an interactive whiteboard. The interactive whiteboard gives space some children and time to discover and learn new things on his/her own. Teachers and learners supported the ideas of the introduction of smart classroom. Many schools in developed countries have started to establish whiteboard usage in colleges and higher institutions of learning.

According to Cuthell, J. C. (2005) discovered that the establishment of an interactive whiteboard contributed in shifting education system from instructions presentation to collaborative, it takes away most of the

responsibility of presenting a lesson from teachers and allow the learners in what is called learners centered methods, in learners centered method, learners is the one to discover to the topic means that teacher is supposed to work lesser than the learners who should work a lot. In a smart classroom interactive whiteboards combine many materials like a projector, computer, audio-visual materials that should be presented. As long as the learners are motivated and engaged affect positively their academic performance. Using instructional material that leads to the moving from a traditional way of teaching to a modern way of teaching is better because the world is dynamic, it needs some of the change that can lead to the production of competent workers at the national, regional, continental, and international levels. But some researchers can see this differently because there are some children from the rural areas and in less developed countries where this new modern way of teaching is not started yet but they can perform better than the learners who studied under this new movement of technology in education. It does not mean that all the time the learners who studied in this system, will always perform better. Because they are many other factors that influence learners' academic performance.

Fielding et al (2005)in their research focused on what is termed collaborative learning, that the learner should be centered in teaching. Professional teaching is very important in teaching because it continues to update teaching and administrative staff about the new technology depending on how a dynamic society is changing. Teachers' continuous development is currently being made using technology or physical contact by its implementation but its effectiveness in results is still questionable. Because this activity of teaching made online is only focused on their level of helping one another (Johns-Shepherd & Gowing, 2007). If this continue to be like that the introduction of ICT in the schools will not be efficacy and directly learners' academic performance will be poor.

According to Ertmer (2005) teachers are the main implementers of ICT integration in education system without their effort the implementation of it in teaching and learning cannot be possible because even if different government wants to introduce this new movement in teaching and learning but at the end of the day you find that it is commonly used by the teachers only. It means that teachers should be familiar with it and confident to use this new technological system of establishing smart classrooms in the schools when the teachers will become familiar, even the learners will be motivated to use it and adopt the new system and hence learners academic performance will be achieved since they have easy access to the data, sharing information with others schools and learners around the world.

Model of smart classroom design

The students is supposed to has her/his own laptop in front of him/her which connected to internet connection but the machine will be having software which is able to ban unrelated contents that can misguided class attendees. In that classroom, there is no chalk board except interactive whiteboard (Kimenyi, 2020).

Image of smart classroom (Implementation of Smart Classroom Reaches Over 50% Schools-Education Ministry,n.d)

The blended learning on learner's academic performance in Rwandan public boarding school

	SD	D	N	A	SA	Mean	STD
School leaders make follow up on use of smart classroom by students	14 (4.5%)	9 (2.9%)	26 (8.4%)	82 (26.6%)	177 (57.5%)	4.2955	1.04945
School managers encourage learners to use smart classroom	19 (6.2%)	12 (3.9%)	29 (9.4%)	89 (28.9%)	159 (51.6%)	4.1591	1.14032
School leaders always make constant supervision in smart classroom	17 (5.5%)	21 (6.8%)	23 (7.5%)	91 (29.5%)	156 (50.6%)	4.1299	1.15677
the school allows students to access smart classroom	19 (6.2%)	20 (6.5%)	35 (11.4%)	92 (29.9%)	142 (46.1%)	4.0325	1.18029
Teachers are allowed to smart classroom computers	20 (6.5%)	19 (6.2%)	27 (8.8%)	118 (38.3%)	124 (40.3%)	3.9968	1.15140
teachers are monitored on smart classroom usage	19 (6.2%)	35 (11.4%)	27 (8.8%)	79 (25.6%)	148 (48.1%)	3.9805	1.25805
school repairs on time broken computers	26 (8.4%)	28 (9.1%)	37 (12.0%)	71 (23.1%)	146 (47.4%)	3.9188	1.31016
All teachers use smart classroom in teaching and learning activities	23 (7.5%)	39 (12.7%)	45 (14.6%)	60 (19.5%)	141 (45.8%)	3.8344	1.32694
School have suggestion box where students can manifest their challenges about smart classroom	30 (9.7%)	46 (14.9%)	36 (11.7%)	57 (18.5%)	139 (45.1%)	3.7435	1.40814
School has an IT manager in charge of smart classroom Overall	36 (11.7%)	48 (15.6%)	45 (14.6%)	84 (27.3%)	95 (30.8%)	3.5000 3.9591	1.37331

Note: Strongly Disagree = [1[= **Very Low mean;** Disagree= [1-2[=**Low mean;** Neutral= [2-3[=**moderated mean**; Agree= [3-4[=**High mean**; Strongly Agree= [4-5[= **Very High mean**

The results from table 9, revealed that the majority of respondents strongly agreed the following factors: School leaders make follow up on use of smart classroom by students (μ=4.2955 and STD=1.04945), School managers encourage learners to use smart classroom (μ=4.1591 and STD=1.14032), School leaders always make constant supervision in smart classroom (μ=4.1299 and STD=1.15677), the school allows students to access smart classroom (μ=4.0325 and STD=1.18029). the majority of respondents also agreed the following factors: Teachers are allowed to smart classroom computers(μ=3.9968 and STD=1.15140), teachers are monitored on smart classroom usage (μ=3.9805 and STD=1.15140), school repairs on time broken computers

(μ=3.9188 and STD=1.31016), All teachers use smart classroom in teaching and learning activities (μ=3.8344 and STD=1.32694), School have suggestion box where students can manifest their challenges about smart classroom (μ=3.7435 and STD=1.40814), School has an IT manager in charge of smart classroom (μ=3.5000 and STD=1.37331). Overall, results indicated that approved that majority of respondents agreed that management of smart classroom has strong relationship with learners academic performance as indicated by the table above.

Academic performance

During interviews, director of Studies interviewed confirmed that, from the last five years in academic perspective since the time smart classroom was introduced the academic performance was increased to their school, performance increased in school based exams, district tests and in national examination not only that because school dropout was reduced too, because learners became motivated since the time smart classroom was introduced at their school (DOS$_1$). This was also confirmed by Head Teachers who were asked to compare and contrast learners academic performance before introduction of smart classroom and after they indicated that before smart classroom teachers did not get the opportunities of making research for teaching aid and others instructional materials school spent a lot of money making photo copies of others books borrowed from others school while after the introduction of smart classroom teachers became very confident because the accessibility of instructional materials and teaching aids became easy and even students were able to make their own research to supplement what they have learned in classroom (HT$_2$). Based on what interviewees said we can conclude that learners' academic performance has been increased in Gicumbi public boarding school as most of the variables involved in this research manifest many supporting opinions that they have influenced performance in those schools.

Discussion

The discussion indicated that most of the respondents confirmed that blended learning affect learners academic performance in every school, in the case the leaders put more effort in enforcing its implementation. Traditionally people used to consider education the way teachers is the only one who knows everything and they consider learners as a passive element in education and finally teachers was there to deliver the contents but in new education reforms learners are treated as important element as he/she can educate on herself while teacher is away from the school. They can use internet and other sources of knowledge which can equip them with sufficient knowledge to pass any given tasks.

Academic performance nowadays, is not based on teacher's activities because they are other factors which enhance teaching and learning in educational institutions such as environment, materials and learners motivation in addition to that school time table can also influence teaching and learning activities. With this reason government must supervision many things apart from focusing on teachers activities only.

Conclusion

Quality of education is not only focused on teachers' motivation and hard books but also on student's motivation, conducive environment, parental involvement, peer teaching, and availability of ICT tools which contribute to students researching. Finally government should make research on the effective use of technology in education, provision of continuous professional development to the teachers about ICT use and making mobilization to the local community to participate in contributing to the school activities especially procuring of ICT Tools. The study concluded that there is significant effect of blended learning on learner's academic performance in Rwandan public boarding schools.

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