

Effects of the Use of Lecture Method and Wordle on the Performance of Students Taught Curriculum Studies 1: EDU222

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Abstract

The study sought to determine the effects of the use of Wordle and lecture method in teaching Curriculum Studies 1 EDU: 222 on students' performance. 100 students were purposively selected and to ensure homogeneity and consistency, the WRub was given to the 100 students and they were then grouped based on their performance - above average, average and below average. Cluster random sampling technique was used in assigning the three groups into the two experimental groups A and B using numbered papers. Each group had equal number of above average, average and below average. The WRub used was a teacher and student made test. It comprises 20-item objective test in EDU: 222 requiring students to provide answers and was constructed by the teacher in collaboration with the students from the topics selected through differentiation. Each correctly answered item attracted 5, 4, 3, 2, 1 based on the criteria set and a maximum of 100%. The WRub was administered before (pretest) and after (posttest) treatment for data collection. Pretest has the same feature as the posttest items. The only difference is that posttest items were reshuffled and the colour of paper changed to avoid test wiseness. The findings of the study revealed a significant difference in the mean scores of the students and a significant difference was noted between male and female students taught using Wordle. Based on these some recommendations were made among which are the need to include the use of social media as tools in teaching and the need to build the capacity of teachers in the use of technologies in teaching and learning.

Key words: Effects of lecture method, Wordle, Performance of students, Curriculum studies 1

1. Introduction

In any classroom what teachers do have impact on how well-disposed students are to learning. The method/s and/ or resources used by teachers determine whether learners will be active or passive. In our tertiary institutions, teacher use mainly the lecture method which is a teacher centred method and the implication is that learners are passive and learning tend to be superficial, (Obanya, 2004 and Durosaro & Adgoke, 2011). But when the teacher uses active or collaborative strategies, students think as they learn, activate their prior knowledge and link new concepts to related ones in their schema; hence they tend to be more effective in developing deeper understanding than peers who were taught using the teacher centred strategies, (Obanya 2004 & Abanikanda, 2011). In other words, learning opportunities do not happen without a teacher's deliberate pedagogical actions. Active or collaborative strategies when used in teaching and learning create opportunities and spaces for interaction, negotiation, collaboration and thinking to occur in diverse ways. This is why the extent to which the learners interact in the classroom is closely linked to the kinds of pedagogies used by the teacher to support learning. The use of collaborative strategies includes all activities designed by the teacher to enhance group interaction and make the concept comprehensible. It also includes resources designed to be manipulated in order to facilitate negotiation and communication so as to enhance learning. Among the resources used in teaching and learning in the 21st Century are digital communication tools. The need to operate in accordance with global standards makes the use of digital tools indispensable in teaching and learning in Nigeria. Though evidence abound that suggest that teachers in Nigeria are yet to cue in, (Abanikanda, 2011 and Nwokeocha, 2013). However, it is obvious that teachers and teacher educators can no longer credibly do their jobs without becoming leaders in the use of technology, especially, as the world is driven by these complex set of digital devices and telecommunication networks, coupled with the fact that learners are even more fluent in the use of these tools, (Prensky, 2001 and Nwokeocha, 2013). These trends emphasize that learning is becoming more social and informal and less structured in contrast to the character of formal lecture halls and classrooms that teachers and teacher educators are at home with. As a matter of fact, modern learning spaces which can be physical or virtual are not as restrictive as the traditional learning space as they seek to provide freedom of access and interaction between learners and with peers and /or teachers within and outside the locality. This is because teaching and learning today is no longer limited to the four walls of the classroom rather it can take place anywhere and anytime, the classroom is equally flexible and collapsible. This increases the rate of interaction and collaboration in learning.

However, it is important to note that introducing new technology does not radically change the teachers' pedagogic practice neither does it affect teachers' decision to adopt innovative methods of teaching for improving student learning processes and outcomes (Hennessy, Deaney, Ruthven, & Winterbottom, 2007). Research has shown that teachers adopt technology according to their pedagogical beliefs and their conceptions about teaching and learning. This is why in most cases some teachers use technology to facilitate and reinforce the traditional teaching approaches rather than using it to facilitate learner participation and autonomy. Precisely, it has been discovered that some teachers who use the power point do not use it interactively rather they use it to reinforce the traditional mode of teaching and bore their students talking all through the lesson period as they project the slides. The same is applicable to the use of the interactive white Board by most teachers, Moss, Jewitt, Levañiç, Armstrong, Cardini, & Castle 2007 and Somekh, Underwood, Convery, Dillon, Jarvis, Lewin, Mavers, Saxon, Sing, Steadman, Twining, & Woodrow, (2007). These scholars also add that the Interactive White Board in itself can neither transform teachers' established practices nor alter normal patterns of classroom interaction, because it integrates easily with the teacher's existing practices and reinforces his/her style of teaching. In other words, it is the extent to which the teacher is prepared and willing to alter his/her pedagogical practices to suit students' learning needs and styles that determine the extent to which some of the resources introduced into teaching and learning can stimulate learner interaction and deep learning.

However, technology has the potential to overcome limitations learners face in the traditional classrooms as it provides them with the opportunities to explore, negotiate and communicate with others. By so doing, they not only bring their prior knowledge to bear on the task, they share their understanding and construct new knowledge. Synchronous solutions like video-conferencing and face-to-face interaction through online virtual worlds (Wright, 2010) are becoming increasingly popular as vehicles to promote language learning. Video conferencing is being used to bring learners together over distance so that they can communicate in a common language and share cultural experiences. Oliver & Nikolettatos (2009) affirm that when these technologies are used to support learning, they offer learners the opportunity to engage in activities that produce comprehensible output. Therefore, these pedagogic processes afford learners the possibility of collaboratively developing content and interacting with peers through virtual experiences. Asynchronous tools like email, SMS, Yahoo mail, facebook, blog and the collaborative development of wikis enable the teacher and learners to collaborate asynchronously.

In the last two decades a lot of works have been done on the use of social media in teaching because the current generation of learners are flexible in the use multimedia tools and are motivated to learn when it is used in teaching. Prensky (2001) supports this and refers them as "digital natives" because they have been immersed in a variety of technologies such as computers, the Internet, instant messaging, social networking sites, and cell phones from their childhood. This feature of the 21st Century learners makes them easily bored when the lecture method is used in teaching (Prensky, 2001) and calls for the integration of technology as object, aspect and medium in order to adequately keep them on tasks, sustain their interest and prepare them for the knowledge driven market. Tafazoli (2011) supports this and argues that when technology is effectively integrated in classrooms learners perceive learning as fun but more important is that the role of a teacher changes from being an authority or dispenser of knowledge to a facilitator. He concludes that education without technology, on one hand is: (1) passive, (2) formal, (3) instructor center, and (4) time dependent, while on the other education with technology is: (1) active, (2) informal, (3) student center, and (4) time independent.

As a matter of fact, social media technologies have become ubiquitous, connecting learners to each other and to information and leading to a worldwide shift on how knowledge is created, stored and shared. Kaplan and Haenlein (2010) argue that social media are software and web-based technologies that facilitate interactive dialogues and connectivity using the capabilities of Web2.0 technology that allow for the creation and exchange of user-generated content. Examples include video sharing platforms (e.g., You Tube), photo sharing sites (e.g., Flickr) and social networking sites (e.g., Facebook, Twitter, blog, Wordle). Of interest to these researchers is the Wordle. www.wordle.net is a free Web 2.0 tool that makes it easy to create word clouds. Wordle was created by IBM developer Jonathan Feinberg in 2009 and it is one of the most popular tools in the internet for generating word clouds, (www.wikipedia.com 2014). Wordle is one of the fruitful visual teaching and learning tool that graphical represents or captures words in a given text/passage. It is a visual representation of word frequency. The size of each word in a cloud depends on how many times it appears throughout the text. The importance of a word in the text is reflected in its font size. Put differently, the frequency of the word in a passage increases the

font size of the word in the cloud. Wordle is a flexible tool for learning any subject in the curriculum and can be easily used by students. Learners are fascinated by the layout of the wordle and it stimulates visual learners more. Wordle offers 34 fonts, ranging from classic faces to more entertaining and whimsical choices. Ubiquitous fonts such as Lucida Sans live side by side with less well-known, quirky options like Boopee, Loved by the King, and Alphabet Fridge Magnets All Caps, (www.wikipedia.com 2014).

Moos and Azevedo (2009), in their work on computer-based learning environments and self-efficacy, note that students can use wordle as metacognitive strategy (that is, inactivating their prior knowledge), and deliberately enhancing or facilitating their deep learning of new concepts. Tafazoli (2013) adds that Wordle (www.wordle.net) is a good example of a web-based tool that can help cement the interface between reading, writing and the significance of visual literacy in a 21st century world.

1.1 How to Use Wordle in Teaching

The process for creating Wordle is very easy. The teacher or learners will first identify the passage to use, they will copy the passage and opens the web page- www.wordle.net. Once this page is open, they paste the text or passage in the box provided, after which they will click on 'create'. Other facilities are available to change the colour, structure or pattern of the wordle.

Word cloud as a visualization tools have recently generated increased interest in multiple disciplines due to their ability to present and summarize data in ways that appeal to different types of learners (Baralt, Pennestri & Selvandin, 2011). Research shows that it can be used to teach different subjects in the curriculum, (Tafazoli, 2013). A teacher of social studies can use wordle for revision. He/she can use wordle to summarise each topic taught in the term and project them in the class; asking the students to work in groups to analyse each wordle identifying the main ideas and issues discussed in each of the lessons after which they (the students) present the summaries of their discussion to the whole class. Practitioners can also use Wordle to help learners in the secondary schools or tertiary to compare texts from different genres e.g. a poem and a prose passage learnt. It can be used to teach vocabulary or summary lesson, (Cochrane, 2006). Learners can be asked to produce their own Wordles or encouraged to play around with shape, colour and styling in order to consider the impact of their work on different audiences (Tafazoli, 2013).

Tafazoli (2013) discussed elaborately how wordle can be used in teaching different aspects of the English language curriculum. In teaching the listening or reading skills, the teachers can use Wordle in pre-listening or pre-reading activities. Using it at this stage helps learners by focusing their attention on the topic, activating their prior knowledge about the topic and providing clear view of learners about what they are going to read (Cochrane, 2006). In order words, it can be used in brainstorming before learners listen to or read the passage or text. In teaching speaking skill to second language learners, Wordle can help the teacher activate the right vocabularies the learners need for interaction. Tafazoli (2013) suggests the use of wordle to teachers teaching speaking skills to second language learners because most learners do not remember the exact words to use during group discussing, so they may stop and pause in their speeches. In order to prevent these pauses and stops, the teacher can provide them with word clouds before and during the task and this will make speaking task beneficial and less stressful. In this case, learners are benefits from vocabularies in the wordle which are relevant to the topic they are discussing.

In addition, wordle is very useful in teaching writing skills especially when the teacher is using the process approach. At the pre-writing stage when the learners are developing the outline, word clouds can be used to brainstorm. This provides them with the relevant vocabulary that triggers writing. Viégas, Wattenberg & Feinberg (2009) confirm that educators are a core group of Wordle users and gave examples of how they use Wordle to communicate ideas or concepts; as an entry point into discussion, asking students to explain the prominence of certain words, or to guess what a wordle of a text would look like. Others use it to teach spelling by creating Wordles of new vocabulary words, and then quizzing students on various aspects of the displays. Learning can be fun when wordle is used for instance , children can be asked to create a Wordle Gift for their mother on a Mothering Sunday or for a friend on his/her birthday using details of their friend (Cochrane, 2006)..

1.2 Theoretical Framework

The use of wordle which is a Web 2.0 tool in teaching stems from the constructivist teaching and learning theory. The constructivist theory is the brain child of John Dewey, Jean Piaget, Vygotsky and Brunner and the

underlying premise is that knowledge is not given but constructed based on the learners' prior knowledge (www.wikipedia.com 2014). Therefore children learn best when they are allowed to construct a personal understanding based on their experience of things and reflection on those experiences. In the constructivist classroom, students work primarily in groups and learning is interactive and dynamic using resources which engage all their senses and using multiple intelligences. This forms the basis for the use of wordle in teaching as it is manipulative and appeals to all the senses. The constructivist approaches emphasis social interaction and communication skills, as well as collaboration and exchange of ideas and these have been given a great push by the use of digital communication tools in teaching and learning. Another related theory that supports the use of wordle is the Situated learning theory by Lave, & Wenger, (1991), which reinforces the social constructivists theory by Brunner but holds that learning occurs when students participate in activities that are ideally situated in authentic contexts, or those that approximate as closely as possible to the contexts in which the knowledge will later be required. The use of wordle in teaching motivates, fascinates, stimulates interest, appeals to all the senses and facilitates interaction and critical thinking among learners. Apart from this, wordle provides context for authentic learning which facilitates deep learning.

It is based on the foregoing that the researchers set out to examine the effects of the use of wordle and lecture method in teaching Curriculum Studies 1 EDU: 222 on students' performance.

1.3 Research Question

1. What is the mean response scores in teacher/student made WRub of students taught using wordle and those taught using lecture method in Curriculum Studies 1(EDU222).
2. What is the mean response score of male and female students' performance taught using wordle and those taught using lecture method?

1.3.1. Hypothesis

There is no significant difference in the mean score of male and female students' performance taught using wordle and those taught using lecture method.

1.3.2. Methodology

This is a quasi-experimental study using pretest and posttest design. There are two groups that received treatment and post-test was administered. (See below)

Group	Pretest	Treatment	Posttest
A	O ¹	W	O ¹
B	O ²	L	O ²

Where A, B = Experimental Groups
 O1 = Pretest (Wordle rubrics WRub)
 O2 = Posttest (WRub)
 W = Treatment (Wordle)
 L = Lecture method

Population of the study comprises all second year NCE students of Alvan Ikoku Federal College of Education offering Curriculum Studies 1 EDU 222 in the 2013/2014 academic session totaling 808. Two intact classes out of eight comprising 100 students were purposively selected for the experimental study. To ensure homogeneity and consistency, the WRub was given to the 100 students and they were then grouped based on their performance - above average, average and below average. Cluster random sampling technique was used in assigning the three groups into the two experimental groups A and B using numbered papers. Each group had equal number of above average, average and below average.

The WRub used was a teacher and student made test. It comprises 20- item in EDU: 222 requiring students to provide answers. The test was constructed by the teacher in collaboration with the students from the topics selected through differentiation. Each correctly answered item attracted 5, 4, 3, 2, 1 based on the criteria set and a maximum of 100%. The WRub was administered before (pretest) and after (posttest) treatment for data collection. Pretest has the same feature as the posttest items. The only difference is that posttest items were reshuffled and the colour of paper changed to avoid test wiseness.

The instrument was validated by two Curriculum and Instruction experts and two experts in measurement and evaluation. Their corrections were effected in the final draft. The test was subjected to reliability testing using 20 students outside the study population. The result of test -retest on 20 students yielded

a reliability coefficient of 0.73 when data were subjected to Kuder Richardson formula 20. This result was judged to be reliable

Data collection started after the administration of the WRub in the first session that helped in grouping the students into two homogeneous groups as well as establishing the baseline of the study. The next session was conducting the actual experiment. The two groups A and B were taught for four – six weeks with Wordle created by teacher and students. Within these four-six weeks, group A were taught with differentiated Wordles while group B were taught with the lecture method, thereby acting as control. In the third session, posttest was administered, corrected and marked with the marking scheme as shown by the WRub to ensure uniformity and elimination of bias. The data collected were analysed using ANOVA at 0.05 level of significance. The researchers ensured that extraneous variables were controlled by using one teacher and equal length of time for all groups. Personality variables such as academic level, interest and individual differences were considered by introducing differentiated instruction. The test instruments were structured and secured and researchers emphasized the need to attend lectures regularly and each group had above average, average and below average students. The pretest also ensured group equivalence.

2.1 Result

The results are presented in the tables below under research question and hypothesis.

2.1.1 Research Question 1

What is the mean response scores in teacher made WRub of students taught using wordle and those taught using lecture method in Curriculum Studies 1 (EDU 222)?

Table 1: t-test analysis of data on post test of students taught using wordle and those taught with lecture method.

Group	N	X	SD	Df	t-cal	t-critical	Decision
Wordle	50	65.66	8.12	98	3.8	1.987	Significant
Lecture method	50	41.1	4.28				

The table above shows that those taught with wordle obtained a mean of 65.66, and a standard deviation of 8.12 while those taught with lecture method obtained a mean of 41.1 and a standard deviation of 4.28. The t-test comparison of the mean scores of the two groups yielded a t- calculated value of 3.8 and t-value of 1.98 at 0.05 level of significance with df 98. This shows that those taught with wordle performed better on WRub than those taught with lecture method (control). Hence there is significant difference between the performances students taught with wordle and those taught with lecture method.

2.1.2. Research Question 2

What is the mean response score of male and female students' performance taught using wordle and those taught using lecture method?

Table 2: t-test analysis of data on post test of male and female students taught using wordle and those taught using lecture method.

Group	N	X	SD	df	t-cal	t-crit	Decision
Male	25	69.8	2.58	23	4.1	2.069	significance
Female	25	61.4	2.42				

The above table shows that male students taught using wordle obtained a mean score of 69.8 and a standard deviation of 2.58, while female students obtained a mean of 61.4 and a standard of 2.42. The t-test comparison of the mean scores of the two groups yielded a t-calculated 4.1 at 0.05 level of significance and degree of freedom 23. This shows that male students performed better on WRub than their female counterpart hence there is significant difference between the performance of male and female student

2.1.3. Hypothesis 1

There is no significant difference in the mean score of male and female students' performance taught using wordle and those taught using lecture method.

Table 2: Analysis of variance of data on post test of male and female students' performance of those taught using wordle and those taught using lecture method

Sources of variance	Sum of squares	of Mean squares	Df	F-cal	F-critical	Decision
Between (group)	15987.08	532902	3	44.02	2.699	Significant P<0.05
Within (group)	11621.48	121.05	96			
Total	27608.56		99			

The above table shows F calculated of 44.02 at 0.05 level of significance and $F_{05, 3, 96} = 2.699$. Since the F calculated is much larger than the critical value, we reject the null hypothesis of equal population means and conclude that there is significant difference among students' performance of those taught using wordle and those taught using lecture method.

3.1. Discussion

The result of this study shows that the experimental group obtained a greater mean than the control group on students' performance on WRub. The difference between their mean scores was significant at 0.05 level of significance. The t-cal value yielded 3.8 and t-critical 1.987 with df 95 at 0.05 level of significance (see table 1), while the analysis of variance (ANOVA) showed a calculated F value of 44.02 and F critical 2.699 at 0.05 level of significance (see table 2). These findings corroborate each other showing significant difference due to treatment; which implies that the use of wordle in teaching Curriculum Studies 1 (EDU 222) produced superior performance in the learners than the use of the lecture method. The findings of this study is consistent with findings of other scholars such as Tafazoli (2013), Penestri & Selvandin (2011), Kaplan & Hainlein (2010) and Viegas, Wattenberg & Feinberg, (2009) who posit that the use of Wordle in teaching, enhances learning, facilitates deep learning of new concepts and fascinates the learners. Consequently, its use in teaching is capable of keeping learners longer on the task, engaged and making them more productive. This also supports Prensky (2001) and Nwokeocha, (2013) who argue that teachers and teacher educators can no longer credibly do their jobs without becoming leaders in the use of technology, especially, as the world is driven by these complex set of digital devices and telecommunication networks especially as learners are more fluent in the use of these tools.

In table 2, the data revealed a significant difference between male and female students taught Curriculum Studies 1 (EDU 222) using wordle and lecture method. The null hypothesis which states that there is no significant difference in the mean scores of male and female students' was rejected and replaced with alternate hypothesis. This means that there is a significant difference in the mean scores of male and female students and the difference is in favour of male students. This findings extends the work of Baralt, Pennestri & Selvandin (2011) though they found that the use of wordle appeal to different types of learners but they did not realize that it discriminates between sexes. This implies that teachers should vary methods and resources to take care of differences in sex, needs, and interests, learning styles, readiness and environment.

3.2 Conclusion

This study sought to examine the effects of the use of Wordle and lecture method in teaching Curriculum Studies 1 EDU: 222 on students' performance. The findings of the study revealed a significant difference in the mean scores of the students taught using Wordle and lecture method. This difference was attributed to the treatment given as both groups were equivalent at the beginning of the treatment. A significant difference was noted between male and female students taught using Wordle, which implies that, its use discriminate between sexes.

3.2.1. Recommendation

Based on the foregoing the researchers make the following recommendations:

1. The inclusion of the social media as teaching tools in teaching and learning in the teacher education curriculum
2. The need to build the capacity of teachers on the use of Wordle and other Web 2.0 tools in teaching
3. Technologies should be integrated as aspect, object and medium in all levels of education to adequately prepare learners for the knowledge driven market

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