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Review

Lecture duration: A risk factor for quality teaching and learning in Higher Education

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ABSTRACT: This article explores the possible impact of lecture duration on the quality of teaching and learning in higher education. It does so based on the notion that human attention span has boundaries and limitations, therefore, the concern is: what is the best length of lecture duration for effective teaching and learning in higher education. Based on Capacity Theories of Attention and Bottleneck Attention theory which express that people have limited attention span as well as natural mental filter, this paper interrogates the three hours lecture duration per session as a risk factor that may impact on effective teaching and learning. The aim is to critically evaluate the merit and demerit in consideration to reorienting higher education teaching curriculum for sustainability including quality assurance and control. In this perspective, lecture duration is anticipated as a risk factor that could either facilitate or hinder quality teaching and learning. In conclusion, the paper calls for empirical research to be conducted among students and lecturers to ascertain the possible impact of lecture duration on completion of syllabus including the depth of input versus output and quality academic performance.

Key words: Bottleneck theory of attention, capacity theories, higher education, information overload, lecture duration, quality assurance and control, quality teaching and learning, reorienting curriculum.

INTRODUCTION

As an economist would say; if all things being equal, this paper anticipates that lecture duration is a risk factor that influences quality teaching and learning in higher education. Basically, this assumption is based on the fact that the human mind has limited capacity regarding what it can attend to and absorb at any given time. However, there is a relative torrent of other dynamics such as teaching method, classroom environment, and subject matter which could duly facilitate or hinder human attention span, but the concern of the paper is that lecture duration is a risk factor influencing effective teaching and learning. Therefore, lecture duration is being interrogated. Parameters of attentional selection have shown that time/space is strongly related to academic experience and competence (Heim and Keil, 2012; Martens and Wyble, 2010; Stevens and Bavelier, 2012). Consequently, this paper building on Capacity theory of Attention and Bottleneck theory of Attention argues that, the length of any given lecture duration including study period has direct bearing on attention, memory and performance/competence leading to learning outcome (Broadbent, 1958; McKeachie,1999; McKeachie and Svinicki, 2006; McLeish, 1968; Treisman, 1964).

Background

The primary aim of this paper is to explore the impact of three hours lecture per session on teaching and learning as it is the practice of some institutions of higher learning within Nairobi-Kenya. In this perspective, its major concern is based on the fact that, human attention span is limited; therefore, lectures need to be delivered in short life span in order to maximize the benefits lecturers and students make out of their learning interactions. Affirmatively, some researchers maintained that in spite of variation in attention span, human attention may be as

short as eight (8) seconds to five (5) minutes at any given time depending on the nature of engagement (Benjamin, 2002; Davis, 2009; Goss Lucas and Bernstein, 2005; Wankat, 2002). They went further to posit that students' attention during lectures tends to wane approximately after 10 to 15 minutes in terms of transient or selective sustained attention. Transient attention refers to short-term response to a stimulus that temporarily attracts/ distracts attention, while selective sustained attention refers to focused attention that produces consistent results on a task over time. In this regard, how realistic will it be to continue to teach for three hours on a stretch?

Objectively, does students' attention span have such elasticity to be stretched that far? These questions among many others are some of the issues that this paper wishes to interrogate in an effort towards understanding the impact of lecture duration on effective teaching and learning. In conclusion, the paper advocates that, policy makers of higher education explore ways of re-orienting the curriculum towards adapting a more sustainable approach for improving the depth of teaching and learning input and output

Rationale

This paper presents attention as a prerequisite for any effective teaching and learning in relation to concentration and achievement of educational goals. The justification for this argument is based on the theoretical framework of Capacity Theories and Bottleneck Attention Theory which argue that human attention capacity is very limited irrespective of differences. It is very important to acknowledge that based on ethical reasons this paper will not mention names of schools though this three hours lesson duration is based on teaching experiences observed within higher education located in the region of Nairobi, Kenya, Eastern Africa.

Theoretical Framework

The theoretical framework on which this paper anchors its assumption is Capacity Theories of Attention and Bottleneck Attention Theory which express that, people have a limited amount of attention devoted to any one thing at any given moment. In addition, the theories emphasized that human beings have natural mental filter that will only allow certain amounts of information to go through at a particular time. To say it another way, it means human beings have restricted capacity for absorbing and retaining information. According to Capacity theories of attention human beings have limited working memory capacity for processing all external information and when demands exceed capabilities, the material will not be attended to (Fisch, 2000; Wilson and Korn, 2007). Fundamentally, human cognitive ability is limited in its capacity and particularly when navigating educational program and processes, caution must be taken to ensure that the mind is fed gradually. In this context, the theories argued that we have a central reserve of resources for which all activities compete for, therefore, there are rules that govern how much the mind can assimilate at any given time.

These rules include the processes of filtering, arousal state, stages of information processing such as perception, memory- short term and long term memory, and codes of processing information. In all, the argument is that, the human mind might not have the enduring disposition for engaging in an overwhelming activity specifically when it is overstretched. Such a situation will have high premium when dealing with educational process/program that requires cognitive, affective and psychomotor ability. In the process of filtering, Bottleneck Attention theory clearly emphasizes that information from all stimulus pass through a sensory buffer where selection is done (Broadbent, 1958; Steven and Bavelier, 2012). It has been argued that selection is essentially based on the fact that humans have limited capacity; therefore, selection is needed as a way to ensure that the information process is not overloaded (Stevens and Bavelier, 2012), that is avoiding information overload.

It is anticipated that the information that is not processed remains briefly at the sensory buffer and if not attended to, after a while decays rapidly. Although, Treisman (1964) argued that the mind has the capacity to process some unattended information later but still emphasizes that this activity is rigorous. In this context, she maintained that the mind could be overstretched by the vigor involved, hence, she posits that overloading the mind is not always the best. Accordingly, the mind should not be overfed at any particular time, in order not to overwhelm its attention capacity. That means that since human attention span could be as short as eight (8) seconds to five (5) minutes (Benjamin, 2002; Davis, 2009; Goss Lucas and Bernstein, 2005; Wankat, 2002), caution must be exercised in order not to frustrate it. Accordingly, lecture session of three hours at a stretch could not only be frustrating but smothers attention retention progress. In the light of such argument, it may not be an exaggeration to emphasize that such lengthen period of lecture means that learners are exposed to rapid streams of information which necessarily would bring about selective retention as a mechanism of survival (Heim, Benasich, Wirth and Keil, 2015; Heim and Keil, 2012). Hence, the essence of attention process is to maintain concentration or focalization, which goes a long way to facilitate any quality teaching and learning process, otherwise, educational engagements might fall short of proving to be a creditable venture.

DATA SOURCES: LITERATURE REVIEW

The primary source of data for this paper is based on review of available literature, indicating that much research have been carried out to prove that lesson

duration has direct impact on teaching and learning processes (Biggs and Tang, 1999, 2011; Chickering and Gamson, 1987; Cramer, 2014; Gomez-Perez and Ostrosky-Solis, 2006; Martin et al., 2000; Ramsden, 1992, 2003). These researchers based their arguments on the psychological implication of human attention span which has laudably been described as limited. Therefore, teaching and learning processes/planning need not only deliberate on the length of lesson duration but also adhere to making it a reality in everyday practice of teaching and learning. In this regard, lectures need to be appropriately spaced out in order to give lecturers and students ample opportunity to gain the maximum they can from any given lecture interaction space. In support of such opinion, Gomez-Perez and Ostrosky-Solis (2006) posit that attention span are age sensitive, hence, argue that age must be considered as one of the determinant factors when planning lesson duration. In this sense, an adult's attention maybe slightly higher than a child including young adults but that does not mean that adults have unlimited attention span, thus, caution still need to be exercised when planning and executing educational lessons. This means that, university students' timetable need to consider the students' level whilst planning and implementing lectures. In other words, undergraduate students' timetable ought to look slightly different from postgraduate students based on their maturity level and longer familiarity with higher education programme. No doubt, this kind of time management when factored into planning of lecture duration makes room for quality teaching/learning in terms of fostering sustainability of a viable curriculum including successful completion of scheme of work and quality output.

Affirmatively, Sikora (2013) argues that time plays a critical role in brain-based learning. Building on Erlauer's (2009) work on brain-compatible classroom management, Sikora argues that there are three aspects of time that are prevalent in teaching and learning including time for task, need for more time, and opportune time periods for learning. In each of these aspects the argument is that time is vital in teaching and learning processes, in which the emphasis is that, time should be appropriately set aside for not only accomplishing learning task but essentially also for exploring suitable time for meaningful interaction between lecturers and students giving way to meaningful input versus output. This kind of argument fits in well to the debate of lecture duration period whereby it is highlighted that students need a break in concentration, at least every 30 minutes. In similar perspective, Sousa (1998) maintains that the brain will naturally shift attention, whether we want it or not after every 20 minutes. If this is the brain's natural tendency, then the question is; how do we maintain students' attention for over an hour not to think of two or three hours at a stretch?

It is equally important to note that it is not only about students' attention span but also the lecturer's performance level. In as much as they are lecturers who can plan exciting/variety of lecture activities that are capable of capturing students' attention over a long period of time, it is still imperative to recognize that such lecture plans may not happen weekly, therefore, nature cannot be deceived. Maybe one shot off activity stretching for three hours could be accommodated but not when that is the pattern throughout the semester and across all courses. For example, a lecturer who teaches 6 or 9 hours lectures in a day may not perform excellently across all the lectures and the same might apply to students who may have to attend 6 to 9 hours lectures in a day. Consequently, one cannot plan to fail where the autumn desire for success is the ideal. The usual slogan of pedagogy is to break down learning activities into little components for easy and quicker comprehension; otherwise, much of the effort might be wasted (Erlauer, 2009; Howard, 2000; Sikora, 2013; Sousa, 1998).

Furthermore, Sousa (1998) argues that the peak period for learning within the concept of class activity is the first ten (10) minutes and as such encourages teachers to use such timing for teaching new concepts. The underlying argument is that too long a time might be boring for teachers and students (Begley, 2012). Incidentally, some scholars have argued that teaching and learning is dependent on student's level of attention (Fisch, 2000; Hagstrom and Lindbergb, 2013; Sikora, 2013; Sousa, 1998; Wankat, 2002). Therefore, there is need to space out everyday teaching and learning activities in order to give the human mind/brain ample opportunity to grasp as much as it can. Otherwise, if stretched beyond boundaries the human brain might simply be overwhelmed and in response resign to select and filter what may appear important. In this process of selection there is greater possibility to disregard valuable and salient information. In addition, the human mind might develop other adjustment measures to deal with long lecture duration such as taking undue break time including arriving late and worse still not completing the allotted hours.

Nonetheless, this paper advocates that further empirical research be carried out among students and lecturers in order to explore what is the impact of the three hours lecture duration if any and how best can this be handled. That notwithstanding, the paper acknowledges that there are other possible factors that might impact on effective teaching and learning including the time of the day when lecture is delivered, the number of three hours' lectures the students have in a day as has been mentioned above, the lecturers' knowledge of subject matter, and lecturer/students' emotional disposition etc. But the major concern for this paper is that lecture duration when all other things are controlled will still affect the quality of teaching and learning. Consequently, this one single factor of lecture duration is duly addressed, and on this basis we turn to address some of the possible merit and demerit.

MERIT OF LONG LECTURE DURATION

The merit of long lectures are hard to come by although give and take it could make way for intensification of presentation given the chance that it provides lecturers and students the opportunity to interact for a longer period of time. In this sense, both parties are able to make the best they can from this long interaction period. This has become very necessary where either the lecturers or the students may not be easily available within the week or greater part of the schedule semester timetable. Hence, in this case long lecture duration sessions are suitable as an adjustment measure to fulfill the required teaching schedule. This has become very necessary within some high education wherein tertiary institutions grapple with full-time employment of lecturers. In this context, the part-time lecturing becomes the order of the day, wherein lecturers who come in to deliver lectures have other engagement, particularly if they are full-time employed somewhere else. Therefore, they can only afford to devote three hours at a time. Give and take, there are other implications to such a scenario. It means that meaningful lecturer and student interaction outside the lecture session might be smothered, as lecturers are likely not to be available for further interaction. Hence, the students will not have the lecturers on the ground for consultation.

Sometimes too, long lecture duration can happen in form of block lectures in order to give room for a visiting lecturer to fill-in the gap of possible absence where s/he may not be available. Appropriately, this can fill-in the gap of having workshops and seminar lectures. In the light of such situations, long lectures are useful and suitable, otherwise, may have other overwhelming impact leading to possible loss of quality teaching and learning. On this note, we survey the possible demerit.

DEMERIT OF LONG LECTURE DURATION

Building on attention theories, it is clear that human attention span is limited, therefore, long lecture duration is likely not the best for any meaningful teaching/learning plan. Primarily, students and lecturers are likely going to be bored with this long session and even if they were not, by natural inclination might not have the maximum disposition to concentrate throughout the given period. Science has shown us that effective human attention span last for 10 to 15 minutes at any given time (Benjamin, 2002; Davis, 1993; Goss Lucas and Bernstein, 2005; Wankat, 2002). For that reason, long lecture duration is not the best in terms of transmission and retention of knowledge. In the face of long duration of lecture, lecturers and students could develop some adjustment strategies such as arriving late to lecture, adopting a laisse-fare attitude, and worse still ending the lecture early, thereby not able to complete the schedule time.

From de facto observation, the three hour lectures mostly last for 2hr. 30mins, leaving the 30 minutes for break period, which seems appropriate. Ideally, there should be breaks in-between the 2hr. 30mins in order to afford the students time to rejuvenate and begin again. Maybe some of these breaks are given at every one hour or 45 minutes intervals. But what happens if the 2hr. 30mins is not aptly used up for lectures.

Interestingly, a student or lecturer who may happen to take ill on any day that they are supposed to have a three hours lecture would have missed so much lesson period in a week. Given such scenario, it can be argued that long lecture duration has negative multifaceted impact on quality teaching and learning. Therefore, caution must be taken to address the practice of long hour lectures, particularly in the case of undergraduate students who are fresh from high school and may be located within the space of adolescence. Their academic mental age might grapple with this long lecture duration, although with time they will get used to it but what kind of impact could it have on their process of retention of knowledge?

It is important to note that whenever any of the given situations exist, the impact on quality teaching and learning is immeasurable as there is bound to be devastating impact on the depth of input versus output. From all indications, the sustainability of a viable curriculum including quality assurance and control is challenged. In this view, this paper strongly advocates that further research be conducted among lecturers and students to investigate their position on this matter.

CONCLUSIONS

The major argument of this paper is that long lecture duration impacts negatively on quality of teaching and learning, particularly based on human attention capacity. The salient issue is that human attention span is limited, which some researchers have laudably stated that it lasts for a maximum of 20 minutes in every hour (Sikora, 2013; Sousa, 1998). Therefore, the human attention capacity cannot be stretched beyond its natural tendencies. Hence, this paper advocates that lectures be planned to accommodate the limited human attention span. In this context, this paper describes long lecture duration as a risk factor impacting on quality teaching and learning. Accordingly, the paper proposes a re-evaluation of the long lecture duration as practice in some higher educational institutions within Eastern Africa region. The single reason for inviting such a re-evaluation is to ensure that the curriculum is reoriented towards appropriate teaching and learning plan facilitating sustainability as well as quality assurance and control. Otherwise, much might be less achieved despite the laborious effort that lecturers and students are putting towards ensuring well-meaning output. Now is the time, for re-orientating the teaching curriculum to reflect authenticity leading to greater performance and out-put.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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