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Questioning 'Questioning': Examining the Use of Questioning as an Interactive Teaching Tool in Higher Education

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ABSTRACT Questioning is an essential component of effective teaching. The extent to which lecturers are able to ask appropriate questions goes a long way in ensuring content mastery and content application. In this paper we explore questioning as an interactive teaching tool in higher education. The paper is informed by the social constructivist learning theory which asserts that learning is a social practice and learning is construction of meaning by learners through interaction. We argue for the importance of appropriate questioning, its purpose and effect in teaching and learning. Different ways of questioning that ensure effective interactive lecturing are critically discussed. Effective timing of questioning, response rate, dealing with students responses as well as linking questioning to Bloom's taxonomy of learning objectives, as important issues in appropriate questioning, are also explored. Conclusions are made on the importance of effectively handling questioning as a teaching method and recommendations are given for university teachers to have proper training in questioning.

INTRODUCTION

One of the basic skills of effective teaching is the ability to ask students questions (Adler 1982). Adler (1982) further states that teachers often ask different questions to students in order to ensure that they are fully engaged in learning and are involved in deeper-level thinking. The teacher's ability to effectively ask questions does not only assist in extracting factual information from students but it also helps in students' making connections in concepts learnt, make inferences, increase awareness, encourage critical thinking and other necessary ingredients of deep learning (Tagg 2003). Tagg (2003: 70) further states that;

Deep learning is learning that takes root in our apparatus of understanding, in the embedded meanings that define us and that we use to define the world.

Making meaning out of what is learnt becomes an imperative of deep learning. To this end, students understanding of concepts learnt can be enhanced by appropriate use of questions. Research indicates that questioning is only second to lecturing as a teaching technique. This shows that teachers spend a lot of instructional time asking questions in class. However, it is always necessary to examine the effectiveness of the use of questions in enhancing learning.

Questioning is considered an influential teaching act because it is the most basic way teachers use to stimulate participation, thinking and learning in the classroom (Blosser 2010). A question is any sentence which has an interrogative form or function. In classroom settings, teacher questions are defined as instructional cues or stimuli that convey to students the content elements to be learned and directions for what they are to do and how they are to do it (Cotton 2010). The million dollar question to ask is "Do teachers know what kind of questions they ask most frequently?" Research on the questions teachers ask shows that about 60 percent require only recall of facts, 20 percent require students to think, and 20 percent are procedural in nature (Blosser 2010).

Leslie (2012) asserts that the art of asking questions is an ancient part of good teaching and one of the basic skills all teachers should be able to master. Socrates believed that knowledge and awareness were an intrinsic part of each learner. Leslie further points out that in exercising the craft of good pedagogy a skilled educator must reach into learners' hidden levels of knowing and awareness in order to help them reach new levels of thinking through thoughtfully developed questions. Teachers should

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therefore hone their questioning skills by practicing asking different types of questions, and try to monitor their teaching so that they include varied levels of questioning skills.

WHAT IS QUESTIONING?

Questioning is regarded as an influential teaching act since it is the most fundamental way teachers use to motivate participation, thinking and learning in the classroom (Blosser 2010). Most authors view a question as any sentence which has a probing form or function. In classroom situations, teacher questions are defined as instructional nods or spurs that convey to students the content elements to be learned and guidelines for what they are to do and how they are to do it. The million dollar question to ask is "Do teachers know what kind of questions they ask most frequently?" Research on the questions teachers ask shows that about 60 percent require only recall of facts, 20 percent require students to think, and 20 percent are procedural in nature (Blosser 2010).

The second Princile (2012) asserts that the skill of asking questions is an olden part of good teaching and one of the basic skills all teachers should be able to master. It was believed that understanding and awareness were a fundamental part of each learner. Leslie (2012) also points out that in exercising the skill of good instruction, an experienced teacher must reach into learners' hidden levels of knowing and attentiveness so as to help them stretch to new levels of intellectual through considerately crafted questions.

IMPORTANCE OF QUESTIONING IN TEACHING AND LEARNING

It is common knowledge that a learner is by default a questioner. The drive in any human being to increase expertise, knowledge or skills is driven by disbelief, astonishment and confusion of the need, or inquisitiveness (Bond 2010). This ensures that the learner formulates and pursues an issue so as to come up with answers to. This could take a different form from a mere question that looks for pure facts to multifaceted ones that investigates notions or principles. Furthermore, an answer that solves the learning need may be provided from such questions or may generate further questions. This implies that teachers should ask relevant and well-constructed questions instead of vague questions.

There are different purposes for classroom questioning as suggested by Akandi (2009: 10) in Fakeye and Ayede (2013) and The Second Principle (2012). One of the purposes is that questioning stimulates students' thinking and develops their zeal to participate in the teaching and learning process. Through questioning teachers are able to ascertain students' preparedness for lessons and. questioning enhances students critical thinking skills. Questioning also allows teachers to assess work done previously in terms of achievement of set learning outcomes. Teachers are therefore encouraged to utilise more learner-centred teaching approaches as opposed to traditional methods of teaching which promote rote learning.

Questions in the teaching and process are vital as they motivate or drive students to think critically in multidimensional ways. Well-constructed questions should not be directed at one correct answer only as the majority of teachers may think. It is believed that due to people's preoccupation with their cell phones and social media, there is a possibility of danger of losing such capabilities to relate person-to-person at meaningful intellectual levels (Leslie 2012; Fakeye 2007).

Without asking questions, we cannot find solutions to problems. This is supported by (The Second Principle 2012; Erickson 2007; Leslie 2012) when they point out that encouraging learners to reflect, to learn and to recall through asking them questions is a very primordial form of education and it must be understood and maintained. Educative questions turn to advance pedagogical purposes, classroom purposes and educational ends. For example they facilitate student thinking and enhance participation (Dilton 2012).

TYPES OF QUESTIONS

There are different types of questions teachers can use to in ensuring effective use of questioning for improved teaching and learning (University of Kansas 2012; Leslie 2012; Blosser 2010; Erickson 2007; Fakeye 2007). There are probing questions which require learners to go beyond their first answer (University of Kansas 2012). What it therefore means is that following teacher questions will be formed on the basis of what

students would have said. Under probing questions there are clarifying questions in which students are asked to elucidate their responses. Students may also be required to rephrase their statements or elaborate on their points. There are also questions on increasing critical awareness where students are required to validate and substantiate their responses. In such a way students learn to give reasons as justification for their responses to questions. Questions may dwell on refocusing and students will be required to give implications of their responses or relating their responses to a given scenario. Such types of questions evoke higher order thinking in students (Wellington and Osborne 2001).

There are also prompting questions in which students are asked questions in order to stimulate them to think (Leslie 2012). Students may be given a scenario to examine and in analysing the given scenario they are stimulated to think critically. In ensuring the promotion in interactivity in the learning process the teacher may redirect a question to another student: In this case, after a student has given his/her response, another student is asked to elaborate on the same issue but giving his/her own views and implications. In this way, students learn from each other and give different opinions on the same issue

Teaches may also make use of factual questions which are asked to inspire students to recall what they would have learnt in previous lessons. Under normal circumstances, the teacher uses verbs such as where, who, when and what when asking such questions. Factual questions require practically modest, simple and straight forward response grounded on evident realities. These are at the bottom level of reasoning and in most cases responses could either be right or wrong.

Divergent questions are part of factual questions that may be employed by teachers. Such types of questions have no definite answer, as students will be required to explore a variety of possibilities. It is believed that they require both abstract and concrete reasoning to explore the most possible responses. Divergent questions enable students to discover different possibilities and come up with a variety of answers (The Second Principle 2012; Leslie 2012). Students will be required to evaluate, investigate, assess, or create a knowledge base and then come up with different conclusions (University of Kansas 2012; Leslie 2012; Ames and Ames 2004).

Higher order questions can be utilised in teaching and learning to allow students to respond after critically engaging with issues rather than merely recalling them. Such questions require students to generalise responses associated to realities in meaningful forms (University of Kansas 2012). For example, in evaluation, students will be required to exercise judgement based upon a comparison of viewpoints to usual criteria. Comparison will entail students' examination of relationships between issues and ideas. Students' capability in drawing similarities and differences on issues under examination is an important higher cognitive ability.

Questions should also allow for application in which students are required to use a concept or principle in a context different from that in which she/he learned it. Through use of application questions, learning ceases to be merely theoretical but becomes practical. Application questions are closely related to problem-solving ones. In problem solving, students will be required to refer to known knowledge so as to be able to find a solution (Ames and Ames 2004). Acquisition of knowledge, skills and values in learning is motivated by a strong desire to solve problems. This is contrary to acquisition of knowledge for knowledge's sake.

It is also important for teachers to use question related to the affective domain. According to the University of Kansas (2012), such questions provoke expressions of student's attitude or feelings. It is vital to develop appropriate attitudes and values in students. Use of questions where students reflect on issues and bring in feelings and attitudes assists in inculcating important and requisite values as deemed by society.

RELATIONSHIPS BETWEEN QUESTIONING METHODS AND STUDENT ACHIEVEMENT

A scenario whereby questions are posed as teaching progresses has been found to be more productive in producing positive outcomes than teaching whereby students are not asked any questions (Cotton 2010). It is believed that students perform better on test items previously asked as recitation questions than on items they have not been exposed to before. This goes to say that verbal questions asked during classroom presentations are more effective as in most cases they promote deep learning as opposed

to surface learning promoted through written questions. Fakeye and Ayede (2013) noted that if students are to be successful in any examination, this entirely depends on the calibre of teachers who ask good questions during the teaching and learning process as this expedite learning Oshodi (1998), Duyilemi and Duyilemi (2002) in their studies in Fakeye and Ayede (2013), echoed that students cannot be expected to perform above the calibre of the teachers. In his own contribution, Bangbade (2004) found out that teachers' qualities have a substantial connexion with students' academic achievement.

SOCIAL CONSTRUCTIVIST LEARNING THEORY

The social constructivist learning theory advances the view that learning does not solely take place within the individual but that it is a social process. Learning is also not a passive development of behaviours that are influenced by external forces (McMahon 1997). The theory further reveals that meaningful learning occurs when individuals are engaged in social activities. Questioning becomes important in ensuring that students are involved in social activities as inquirers into knowledge. Through the use of well conceptualised questions, students are able work together to inquire into issues and sole problems.

Social constructivism, as advanced by Vygotsky (1982), gives preeminence on the role of the significant others in knowledge construction. The teacher in this case of teaching and learning in a higher education environment is the 'significant other' responsible for mediating learning environments for students. This mediation is done by use of questions to provide students with direction of what to engage in as they become active learners in student-centred learning activities (Gray 2002). Furthermore, questions are utilised to assist students to construct their own meaning by building on their previous knowledge and experience. Another important pedagogical practice in social constructivism is scaffolding which encourages dialogue between students and teachers. Scaffolding makes use of questions to assist students to understand concepts taught. In responding to questions, students will be required to elaborate their responses as well as justify their opinions.

In anchored instruction, social constructivism advocates learning environments that are designed to provoke thoughtful engagement that helps students develop effective thinking skills and attitudes that contribute to effective problem solving and critical thinking. Such engagement is also made possible by effective use of questioning. Lecturers' use of higher order questioning allows critical thinking in students and normally such thinking is targeted towards solving real life social problems. In this regard, learning becomes important in solving problems in contrast to acquisition of knowledge for knowledge's sake.

QUESTIONING AS AN ASPECT OF INTERACTIVE TEACHING AND LEARNING

The ability of a lecturer to ask questions is an important element in the learning process (Albergaria et al 2012). Through use of effective questioning in the learning process, students are assisted to expand their knowledge. Questions 'cognitive disequilibrium' in students and ensure that they think critically to provide answers to their states on mental uneasiness (Graesser and Olde 2003: 525). Questioning enables students to develop different cognitive levels of handling information and such levels are acquisition, specialisation and integration of knowledge (Cardosoa and Almeida 2014). On the same note, Hofstein et al. (2005) support questioning that promotes higher cognitive level capabilities, such as critical analysis and problem solving. This is in line with calls that today's education should place emphasis on developing and inculcating students higher-order thinking skills and conceptual understanding (Lau and Yuen 2010).

One of the interactive teaching approaches involves the method of action learning which provides for the organization of self-learning environments and allows students to solve problems (Yakovleva and Yakovlev 2014). Similarly, Etemadzadeha et al. (2013) argue that questioning, as a teaching strategy, assists to promote students to think critically. So apart from promoting interactivity in the classroom, questioning assists in inculcating critical minds in students as they deal with different types of questions from the lower order to higher ones. This buttresses the view by Wilen (1991) that students' learning, thinking, participation and their

engagement during lessons depend on how the teacher formulates and asks questions. Hence, emphasis on the importance of the teacher's art of questioning (Wilen 1991).

Effective questioning is also important in promoting cooperative learning, which is a critical element of interactive learning. Felder and Brent (2007: 34) define cooperative learning as;

… students working in teams on an assignment or project under conditions in which certain criteria are satisfied, including that the team members be held individually accountable for the complete content of the assignment or project.

In such an approach different goals such as the academic, affective and social ones are promoted and achieved at the same time. The approach does not only seek to develop thinking skills but social skills as well. Clear questioning instructions should be given to ensure that students are aware of expectations in the group task.

Importance of Student Participation in Learning

Students' participation in the learning process is informed by the constructivist learning theory or belief structure is a theory built on the assumption that knowledge is constructed by students' participation in provided learning experiences (Driscoll 2005). Through questioning, students' participation in learning is enhanced and they become more involved in constructing knowledge by collaborating with other students. Questioning promotes active learning and assists students to derive meaning from what they experience (Alessi and Trollip 2001).

As observed by Jones and Araje (2002) cited in Ndebele and Maphosa (2013) student interaction in learning is informed by a constructivist view of learning which places emphasis on students' active engagement with content. In constructivist earning environments, learners' assume more responsibility and being more active in learning (Köksal 2009). Through use of questioning learners are directed on the different active learning activities that they should engage in and this in a way promotes their participation in learning. Active learning allows students to exercise higher order thinking as opposed to passive listening (Cherney 2008). Lecturers are, therefore, encouraged to make use of higher order questions to stimulate thinking in students.

Students' in-class participation is also deemed important as it enhances their classroom experience (Allred and Swenson 2006). Students should not be passive listeners in classrooms. There should be planned and deliberate attempts to actively involve them in the learning process. Effective use of questioning assists in promoting lecturer-student as well as student–student interaction for enhanced learning.

The university teacher should develop the art of questioning in order to effectively utilise question for enhanced teaching and learning. The fundamental issue is for the teacher to be aware of the purpose of using question, which include, among other reasons to increase motivation or interest, to evaluate students' preparation, to develop critical thinking skills, to actively involve students in the lesson, to nurture insights, to assess achievement or mastery of goals and objectives and to stimulate independent learning (Marzano et al. 2001).

IMPLICATIONS FOR STAFF ACADEMIC DEVELOPMENT

Academics teaching in universities may find themselves not adequately equipped as teachers (Stes et al. 2010; Maphosa and Mudzielwana 2014). Such staff members may be experts in their disciplines with no formal training in facilitation of learning. While there are calls for the professionalization of teaching in the university (Simon and Pleschová 2012), there is still need for continuous and sustained academic professional development programmes in the universities. These programmes should be meant to equip academics, particularly those with no formal qualifications, with basic skills in teaching and learning.

On the importance of staff academic development in the university Seyoum (2012: 2) states that;

It is strongly underpinned that professional development activities through professional training and interaction improve university instructors' professional proficiencies and the quality of student learning. Indeed, it is based on the empowerment and dedication of teachers to take ownership of improving their continuous practices …

It is clear from the above cited view that the ultimate purpose of any academic staff development programme is enhancement of student learning. Handling questioning in classrooms is one such area that university teachers would require professional development in. in this regard, emphasis should be placed on the utilisation of questioning to promote interactive learning approaches.

On stressing the need for professional development in the university, Berg and Haung (2004) observe that such development should focus on proven and useful instructional practices and ways to incorporate these into undergraduate teaching for improved student learning marked by increased student engagement, retention and success. Academics in the university would only be in a position to improve teaching and learning approaches if they are exposed to such approaches as well as to theories that inform such practices. Similarly, Scott (2006) underscores the need to embrace more active learning strategies in university teaching. Academics should be exposed to different active learning strategies and their benefits in improved instruction.

Staff development programmes played a pivotal function in ensuring that teacher competencies were enhanced (Singh 2011). One of the competencies could be the utilisation of questioning to promote interactive learning. Graham (2011) points out that knowledge, skills attitudes and performance of staff members have a direct impact on the quality and effectiveness of their work in the university. It is therefore significant that where knowledge and skills gaps are identified in teaching capacities of lecturers, such gaps have to be attended to by continuous and sustained staff academic development programmes.

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