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An Analysis of the Cognitive Level of Questions Asked by Christian Religious Education Teachers in Secondary Schools in Kenya

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Abstract

The study of Christian Religious Education is designed to foster ability in critical thinking among learners, enabling them to become free thinkers capable of rejecting indoctrination. CRE teachers are expected to employ higher-level cognitive questions in the course of teaching. However, according to CRE chief examiner's reports of 2017, 2018 and 2019 candidates were unable to tackle successfully higher level cognitive questions. This contributed to the less than expected performance by CRE candidates at KCSE. Given that the pattern is national, it became imperative to investigate the contribution of pedagogy to the type of thinking developed among learners. This study sought to analyze the cognitive level of questions in secondary school CRE. The study first revealed, the majority of questions asked in the classroom and those set in internal exams were of lower order level. Second, learners were not given enough opportunities to think at higher cognitive level because of rare higher level cognitive questions posed. The researcher concluded that there is a disconnect between what the KNEC examination requires students to do and how the teachers prepare them for the final examination. It is recommended the Ministry of Education, through field personnel, should monitor classroom teaching activities and assessments to align type of questions teachers ask to what is expected by the KNEC.

Key words: Higher order questions, lower order questions, questioning strategy

Introduction

Questioning is a pedagogical strategy that can kindle critical thinking among students (Cuccio□Schirripa and Steiner, 2000). Hence, the type of questions subject teachers ask should foster a specific type and level of thinking. When teaching any class or any topic, questions can be the teachers' best tool. In this regard, it is necessary for teachers to ask high-level questions as well as for learners to be able to answer such questions, as this is essential to learning. In Kenya, however, evidence available from the Kenya National Examinations Council Reports shows that students have yet to master the skill of answering higher-level cognitive questions but excel in providing answers to lower cognitive level questions (CRE Chief Examiner 2018. In that report, the CRE Chief Examiner gives an example of a question where candidates were expected to explain the relevance of the story of David as an ancestor of Jesus to Christians today. Candidates were unable to connect the story of David to Jesus and to demonstrate how Christians benefited from it. Further, as stated by the CRE Chief Examiner (2018), the below-average performance in CRE was attributed to students' inability to tackle questions requiring higher level cognitive skills. Wahap (2003) posits that in reality, students lack an opportunity to think at the higher cognitive level due to teachers' practice of asking lower cognitive questions. In addition, Mahmood& Lim (2011) state that teachers practice questioning skills that cover more of lower order thinking questions than higher level thinking skill questions. According to the duo, teachers' questions often focus on information recall.

Although low-level questions that are posed by teachers do not require students to engage in deep thinking, it has been argued that low-level questions lay the groundwork for higher-level cognition (Tienken et al., 2010). Teachers

should therefore ask and assess learning using both lower order and higher order cognitive questions.

Literature Review

Questions are generally categorized in accordance with their level of cognitive demand required to answer them. Revised Bloom's Taxonomy (2001) is the most effective method of categorizing the cognitive levels of questions. This framework creates six levels of cognitive complexity ranging from the lowest level to the highest. Questions at the lower level ask students to recall and comprehend material they have already learned or been taught by the teacher. For higher level questions, students are required to use the knowledge they have learned to form a logical argument to support their answer. Most high-level questions do not have one correct answer, but rather provide students with an opportunity to express their thoughts and interpretation of the text in a way that is unique to them (Tienken et al., 2010; Peterson & Taylor, 2012).

Low Order Cognitive Questions

There is predominance of lower level questions asked by teachers, which seems to be a worldwide problem (Nasser &Oqlah 2014). The prevalence of low-cognitive questioning is so great that even teachers engaged in professional development specifically aimed at developing high-cognitive, divergent, democratic classroom discussion cultures still tend to use low-cognitive questions (Bickmore& Parker, 2014; Purdum-Cassidy et al., 2015; Robitaille& Maldonado, 2015). Some of the examples of lower order questions asked in CRE in Kenyan secondary schools are; State eight features of local cananites religion; Identify the different religious specialist in African communities; Narrate the visit of the angel to the shepherds on the night Jesus was born. These questions require students to recall the information as taught in class. Although teaching for low-level cognitive questions is easier, it does not encourage students to engage in higher level cognitive thinking (Tienken et al. 2010). Asking low-level questions leads CRE students to think at a lower level, such as the recall of information or the application of concepts or knowledge to familiar situation and contexts.

Although low-level questions that are posed by teachers do not require students to engage in deep thinking, it has been argued that low-level questions lay the groundwork for higher-level cognition (Tienken et al., 2010). According to Tienken et al. (2010), it is always good for a teacher to start asking questions of lower order because they are appropriate for evaluating students' preparation and comprehension; Diagnosing students' strengths and weaknesses and; Reviewing and/or summarizing content. Then move to asked question of higher order because they usually more appropriate for encouraging students to think deeply and critically; Problem-solving; Encouraging discussions; Stimulating students to seek information on their own.

A study by McCarthy et al. (2016) videotaped 12 middle school teachers' lessons over a six-month period. The researchers found a heavy reliance on low-cognitive questioning strategies such as checklists, probings, and follow-ups as well as scaffolding/leading. Students were found to benefit from these questions in terms of understanding correct principles, correcting misunderstandings, and participating actively in class discussions.

Higher-Level Cognitive Questions

It is said that higher-level thinking among learners occurs when CRE teachers ask higher level cognitive questions (Brookhart 2010). Some of the examples of lower order questions asked in CRE in Kenyan secondary schools are; "With reference to the infancy narration in Luke chapter 2", "explain ways in which the birth of Jesus was an extra ordinary event?"; "On the prophecies about the coming of the Messiah, what picture does prophet Isaiah present of the servant of Yahweh?;" "With reference to the incident when Jesus was dedicated to God at the age of forty days outline what Simeon and Anna revealed about his life?." These questions require learners to apply to content learn in one context to another context. Therefore, teachers play an important role in engaging students in higher order thinking skills by asking higher level cognitive questions.A higher level cognitive skill is one

of the important element for an individual learner to be able to solve new problems in the 21st century (Brookhart 2010). Thomas and Thorne (2009) argue that higher-level cognitive skill plays an important role in applying, connecting, or manipulating prior knowledge in order to effectively solve new problems.

From the above statement, it is worthy to note that higher-level cognitive questions go beyond memorization and factual information which are lower level cognitive skills. However, Paramore (2017) identifies an imbalance of questions often found in teaching. According to Paramore (2017) that there is dominance of talk and over reliance on closed questions, providing only limited assessment for learning information for a teacher.

There is considerable evidence that higher level questions that require students to analyze, synthesize, evaluate, categorize, and/or apply information are rarely used by teachers in class (Peterson & Taylor, 2012). This, in spite of the finding by Lewis (2015) that asking higher level cognitive questions provides teachers with more information regarding student understanding. Based on research on the relationship between reading comprehension and achievement Lundy (2008) established that increasing the level of cognitive questioning is positively correlated with increased understanding of target material by students.

Methodology

In modern research a budding researcher has several options to choose from: one can choose the quantitative research, the qualitative research or take a middle road encompassing a mixture of the two methods. The choice of research methodology is a function of the research objectives formulated. Therefore the research methodology was qualitative because of the nature of the title of the study.A researcher can choose from among the five qualitative approaches, that is narrative study, phenomenological study, grounded theory study, ethnographic theory, and case study (Taylor at el. 2016, Creswell &Poth 2018). In this study, **phenomenological research** was applied, which is based on the view that our knowledge of the world is rooted in our experiences, and the researcher's task would be to describe, explain, interpret, and explain these experiences (Hammersley, 2013, Denscombe, 2014, Cohen et al. 2018). A further aim of phenomenological study, according to Marshall and Rossman (2016), is to describe, explain, and interpret a phenomenon, situation, or experience by assessing the meaning of a phenomenon, situation, or experience from the perspective of participants, usually at an individual level as well as group level.

The researcher utilized observation guide to collect data.Observation Guide is a pre-planned research tool which is prepared to purposefully to collect data to serve research questions and objectives. When using this tool, the researcher observes the "classroom interactions and events, as they actually occur" (Burns, 1999,). Flick (2006) also contends that observation is an attempt to observe events as they naturally occur. More importantly, observation enables the researcher to combine it with questionnaires and interviews to collect "relatively objective first-hand information" (Johnson & Turner, 2003). Further Juan and Ong'ondo (2011) state that observation means getting data through critically watching a person or persons as they participate in particular activities with a view to obtaining deeper understanding about activities the persons under study are engaged in.

In this study, the researcher randomly sampled 20 CRE teachers. The sample- to- variable ratio suggests a minimum observation to variable ratio of 5:1 but ratios of 15:1 or 20:1 are preferred (Hair et al, 2018). This means that although a minimum of five respondents must be considered for each independent variable in the model, 15 to 20 observations per independent variable are strongly recommended. In this study, the 20:1 ratio was utilized. For lesson observation in this study, there is one independent variable which was observed at the same time; the type of questions asked by CRE teachers. At the ratio of 20:1, a total of 20 observations were made.

Data Analysis

The researcher analysed the cognitive level of oral questions asked in the classroom, internal

exam questions set by CRE teachers and KCSE questions on selected topics. During the classroom observation, the researcher observed, recorded, and later analyzed the questions. Furthermore, the researcher examined questions set by teachers for internal exams as well as questions submitted for the KCSE on certain topics. In order to collect data for this objective, the researcher observed 20 CRE lessons taught by 20 CRE teachers in various secondary schools in Kenya. Moreover, document analysis was used to analyze the internal exams questions and KCSE exams questions on selected topics of CRE.. Additionally, the lesson plans were used in order to determine the questions that the teacher intended to ask in class.

The table 1 below illustrates the cognitive level of the questions. It includes the number of teachers, the topics that the observed 20 teachers were teaching, and the verbs used in the questions asked in the classroom, internal exams, and in KCSE exams on the topics observed.

Table 1.Cognitive level of questions

Teacher	Topic	Questions asked in classroom		Internal exam question		KCSE exam question	
		Verb	Cognitive level	Verb	Cognitive level	Verb	Cognitive level
1	Parable of sower	State	Remember	Relate	Evaluate	Describe	Understand
2	Rites of passage	Outline	Remember	Identify	Remember	Explain	Evaluate
3	Life of king David	Give	Understand	State	Remember	Explain	Evaluate
4	Prophets Amos	Narrate	Remember	State	Remember	Describe	Understand
5	Prophet Jeremiah	Outline	Analysis	Outline	Remember	Outline	Analysis
6	St. Luke Gospel	State	Remember	Give	Understand	Give	Understand
7	Prophet Amos	Give	Understand	Explain	Understand	Explain	Evaluate
8	Rites of passage	Identify	Remember	Outline	Remember	Explain	Understand
9	Prophet Isaiah	Outline	Remember	Outline	Remember	Describe	Understand
10	Parable of the yeast and the mustard	List	Remember	List	Remember	List	Remember
11	Early life of Jesus	Narrate	Remember	Describe	Understand	Identify	Analysis
12	Christian teachings on marriage	Give	Understand	List	Remember	Outline	Remember
13	Nature of God	Explain	Evaluate	Describe	Understand	Explain	Evaluate
14	Fruits of the holy spirit	List	Remember	Identify	Remember	Identify	Remember
15	Christian teaching on work	State	Remember	Give	Understand	Outline	Understand
16	Dedication of Jesus in the temple	Narrate	Remember	Narrate	Remember	Describe	Understand
17	Teachings of Peter	Give	Understand	List	Remember	Explain	Evaluate
18	Sermon on the plain	Describe	Understand	Describe	Understand	Outline	Analysis
19	Christian teachings on work	Give	Understand	Explain	Evaluate	State	Remember
20	Traditional concept on wealth	Outline	Remember	List	Remember	Explain	Evaluate

From the above table 1 the majority of questions 18 at 90% asked in the classroom were those of lower order cognitive level. For example "list the fruits of the holy spirit" and "identify the rites of passage". In these questions, learners were required to provide a simple response, such as death in the case of the rites of passage questionThere were two questions at 10% that addressed higher-order cognitive abilities in the classroom. The two higher cognitive questions were as follows: 'Outline the evils that Prophet Jeremiah condemned in his temple sermon (Jeremiah 7:1-8)"; "with reference to the 1st and 2nd account of creation found in Genesis, explain the nature of God. In order to answer these questions, students had to break down the verses into parts and then draw conclusions. Furthermore, the questions required learners to provide reasoning based on evidence supplied by the verses. Out of the 20 questions analyzed 12 questions at 60 % were those that fall under the remember category, 6 questions at 30% were those of understand category and 1% each for analyze and evaluate categories. Although the lesson plans obtained were not for the lessons observed, the questions the teachers were going to ask on the actual day of class were not included.

The internal exams questions analyzed showed that the majority of questions 18 at 90% were those of lower order cognitive level. For example, "outline seven contents of Jeremiah's letter to the exiles"; "Outline the message of Prophet Isaiah"., While the higher order cognitive questions asked were 2 which amounted to 10%. The two higher order questions were; "Relate the parable of the sower to Christianity today?" "From the Genesis stories of creation, explain the Christian teachings on work". Interestingly, these figures correlate with the analysis of questions asked in the classroom. Out of the 20 questions analyzed 60% were those questions that required students to remember, 30% of the internal questions fell under understand category and 2% were questions that required students to evaluate.

The KCSE exams analyzed on the selected topics showed that 11 at 55% of the questions were of the lower order cognitive questions. For instance, "Describe the teaching of prophet Amos on Israel's election" List the teaching of the parables of the yeast". While higher order cognitive questions were 9 at 45%. Examples of higher order questions were; "Explain four symbolic acts related to hope and restoration as demonstrated by Prophet Jeremiah"; Explain the teaching of Peter concerning the people of God (1st Peter 2: 9 – 10) and "With reference to the sermon on the plain, state five teachings of Jesus on how human beings should relate to one another".Out of the 20 questions analyzed 4 questions at 20% were questions that fall under remember category. The questions of understand category were 7 at 35%. In analyze and evaluate categories were 15% and 30% respectively.

There is no doubt that the KSCE examination required students to answered questions of higher order cognitive level. However, despite this fact, teachers of CRE spend most of their time asking lower cognitive questions in the classroom as well as in internal examination, so students have minimal opportunity to prepare for higher level examination questions. As Biggs (2014) notes, teachers should align assessment tasks and teaching and learning activities systematically so that they support each other and converge towards achieving the intended outcomes that they align with. In this case, CRE teachers should design their teaching and assessment methods in order to help students reach their intended outcome of excelling in all CRE questions in KCSE in order to improve their overall final score.

The results of this study are consistent with Bulent and Bursin's (2015) results, which found

that, questions in social studies were not distributed with respect to Bloom's taxonomy in that there, were more low level questions than high level questions. Even though questions that elicit lower level thinking are useful in teaching, they are ineffective unless they lead to questions that help learners develop higher level thinking skills (Anderson &Krathwol, 2001).

Additionally, Upahi et al. (2015) found that about 80% and 44% of the questions required lower-order cognitive skills (LOCS) and factual knowledge, respectively. The results also revealed that there was no question in the evaluate category of the HOCS, and no question required students to apply metacognitive knowledge.

The researcher further analyzed the learners' responses to the higher cognitive questions if any, asked by CRE teachers in the Classroom. To generate data for this objective, the researcher observed 20 CRE teachers when teaching CRE lessons. Higher order questions are those questions that students cannot respond to simply by recalling information. Students' responses to higher cognitive level questions were observed, recorded and analyzed later. The researcher observed that out of many questions asked by 20 CRE teachers in class, only 2 questions were higher order questions. The two higher cognitive questions were as follows: 'Outline the evils that Prophet Jeremiah condemned in his temple sermon (Jeremiah 7:1-8)"; "with reference to the 1st and 2nd account of creation found in Genesis, explain the nature of God. From the 2 higher cognitive questions by asked CRE teachers, 1 question fell under analysis category and another 1 questions fell under evaluation category. The researcher also noted that the 2 higher cognitive questions were asked by a CRE teacher teaching in a national secondary school in Kenya.

Answers provided by learners were of a higher cognitive level. For example the response to the first higher cognitive level question; 'Outline the evils that Prophet Jeremiah condemned in his temple sermon (Jeremiah 7:1-8)' from one learner was that "Jeremiah was to call his listeners to repentance in view of God's judgment on Judah. The judgment was coming because God's people had abandoned Yahweh and had committed idolatry. Based upon the learners' responses, it was a higher level cognitive response since it highlighted the reasons why Jeremiah condemned idolatry.

In this study, the researcher noted that teachers focused predominantly on asking questions of lower cognitive level. This is tandem with the observation of Paramore (2017) which he noted that they is an imbalance of questions often found in teaching saying there is dominance of talk and over reliance on closed questions, providing only limited assessment for learning information for a teacher.

Higher order questions are those questions that students cannot answer just by simple recollection of information. From the 2 higher cognitive questions by asked CRE teachers, 1 question fell under analysis category and another 1 questions fell under evaluation category. According to Bogdanovich (2014) evaluation questions requires students to make judgments, explain reasons for judgments, compare and contrast information and develop reasoning using evidence from the text.

During the lesson observation, the teacher used probing, paraphrasing and wait time strategies to get more answers from her students. According to Rumohr (2013), when a teacher increases the amount of wait-time, so do the number of student responses, the number of unsolicited but appropriate responses, the use of higher levels of logical thinking and the incidence of speculative thinking.Additionally, an increase in teachers' wait-time sets an atmosphere that is conducive to productive

questions on higher thinking levels (Karron, 2018) and also invites students to organize more thorough responses. Moreover, Ingram & Elliott (2014) assert that wait time can trigger learners to give longer and more elaborate answers which are accompanied by elucidation and rational arguments.

Conclusion and recommendations

The researcher concluded that there is a disconnect between what the KNEC examination requires students to do and how the teachers prepare them for the final examination. Additionally, the research also concludes that teachers must make sure teaching and learning activities are aligned so that students are able to achieve their intended learning outcomes; that is, learning to excel at lower levels as well as higher levels.

It is recommended that teachers should strive to balance the number of lower level and higher-level questions in their classrooms as well as in internal questions. Also, test papers should include all aspects of Bloom's taxonomy with a special focus on the higher level aspects of analyzing, evaluating and creating. To guarantee quality of exams, it is also necessary to have assessment experts monitor the tests set by teachers in schools. In addition, it is recommended the ministry of education should redeploy Quality Assurance Officers to schools, so they can monitor classroom activities.

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