Higher Order Questions for Higher Order Thinking Skills

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Abstract

The purpose of this action research was to determine how best higher Order Questions (HOQs) can be implemented to promote students' higher order thinking skills (HOTS). The study is grounded on the Bloom's taxonomy theory and developing HOTS through higher level learning tasks. Using the researcher's grade 11 English class, this study was conducted in 4 weekly reflective cycles of learning instructions guided by HOQs. The research provides a systematic way of utilizing the HOQs in a lesson. It shows that students should be empowered to formulate and respond to HOQ by not only being exposed to reference materials such command terms and sample HOQ but also receiving constructive feedback. This study also concludes that HOT tasks should not be secondary to students first understanding the basics but should be explored when the concepts are introduced during the lesson and that students should always leave a lesson more curious.

Key phrases: higher order questions, higher order thinking skills, Bloom's taxonomy

1. Introduction

"One of the main 21st century components that teachers desire their students to develop are higher-order thinking skills. This is when students use complex ways to think about what they are learning." (Cox, 2019). Cox (2019) also highlights some teaching techniques that can help develop HOTS. These include helping students determine what higher order thinking is, connecting concepts, teaching students to infer, encouraging questioning, using graphic organizers, teaching problem solving techniques, encouraging creative thinking, using mind movies, teaching students to elaborate their answers and teaching question-answer-relationships. This action research examines higher order questioning as one of the strategies that can help students access these HOTS. Although many educators understand the need to formulate HOQs that use the higher levels of Bloom's taxonomy, the opportunity of empowering students to create and respond to these questions by themselves is yet to be fully exploited. The study therefore employs the learning reflective cycles in the researcher's own grade 11 English language and Literature class at the Aga Khan Academy Mombasa to determine the best way to not only use HOQ as a teacher but empower students to ask and effectively answer such questions.

2. Literature Review

2.1 HOTS and Bloom's Taxonomy

"Higher order thinking is thinking on a level that is higher than memorizing facts or telling something back to someone exactly the way it was told to you." (Thomas & Thorne, 2009). Zohar and Dori (2003) also conclude that Higher Order Thinking Skills (HOTS) and Low-Achieving Students are mutually exclusive variables. Although it is indeed true that Higher order thinking may seem easy for some students, but difficult for others, Thomas and Thorne (2009) argue that (1) higher order thinking, like most skills, can be learned; and (2) with practice, a person's higher order thinking skill level can increase." Therefore, this leaves educators with no excuse but to support each student to learn and develop HOTS. It is important to note that in order to implement HOTS effectively, the resource materials must be structured so that they can realize the application of knowledge, skills and values that students acquire to help them understand, reflect and solve problems, make decisions, innovate and create." (Nachiappan et al., 2018). Higher Order thinking is not about giving 'difficult' tasks but stretching the students' thinking even with the basic things that they may have taken for granted. It is making learning really conceptual in nature. Zohar and Dori (2003) recommend that students should be helped to accomplish tasks requiring higher order thinking even when these tasks may seem not to be too difficult initially.

It is almost impossible to talk about HOTS without the bloom's taxonomy theory. This study is consequently grounded on the Bloom's taxonomy conceptualized by Benjamin Bloom in 1956 and later revised by other researchers. The theory was designed with six levels in order to promote higher order thinking (Kelly, 2018). "Bloom's taxonomy is not a simple classification scheme – it is an effort to arrange different thought processes hierarchically." (Stevens, 2019). Each level depends on the student's ability to complete the previous level or previous levels (phases). For example, a student applying knowledge (Phase 3), must have certain information (phase 1) and at the same time understand that information (phase 2)" (Stevens, 2019). The classification and its hierarchy are the widely accepted framework through which all teachers should guide their students through the cognitive learning process. In other words, teachers use this framework to focus on HOTS (Lewis, 2019). "The top three levels of Bloom's taxonomy—which is often displayed as a pyramid, with ascending levels of thinking at the top of the structure—are analysis, synthesis, and evaluation. These three levels of the taxonomy all involve critical or higher-order thinking." (Watson, 2019). When educators talk about HOT, they are often referring to thinking at these levels. "Research shows that when students utilize creative higher order thinking skills, it indeed increases their understanding" (Cox, 2019).

2.2 Higher Order Questioning (HOQ)

This study specifically focuses on effective questioning as one of the techniques that can help students develop their HOTS. These skills cannot be transferred from the instructor to the student; they can only thrive in an environment where thinking is not censored. "A classroom where students feel free to ask questions without any negative reactions from their peers or their teachers is a classroom where students feel free to be creative. "Encourage students to ask questions, and if for some reason you can't get to their question during class time, then show them how they can answer it themselves, or have them save the question until the following day" (Cox, 2019). Spencer (2017) observes that teachers often stick too tightly to curriculum maps and deadlines and students learn to value compliance above empowerment. HOQ "Provide opportunities for students to be challenged" (Oliver, 2011). The questions use command terms that expect students to apply, analyze, synthesize, and evaluate information instead of simply recalling facts. For example analysis questions expect students to break the whole into component parts such as analyze mood, setting, characters, express opinions, make inferences, and draw conclusions;" (Bogdanovich, 2014). As noted with the HOTS, HOQs should also be infused throughout instruction and assessment. Educators should not wait until students have memorized some facts and then ask them to reason with the facts as a second step. Thinking should begin from the minute learning targets are shared with students. (Brookhart, 2014). HOQ will also limit the back and back conversations between the learner and the teacher and encourage more of active learning. Earlier research has indicated that the 21st century teacher is supposed to play a guide role in learning. (Monari, 2019). Problem based learning and Inquiry based learning have also been demonstrated to be among the best learner centered learning approaches. (Monari, 2018). There would probably be no better inquiry process than that which asks HOQs.

3. Methodology: Action Research Cycles

Action research is defined as "a disciplined inquiry done by a teacher with the intent that the research will inform and change his or her practices in the future" (Ferrance, 2000). Using the researcher's grade 11 English Language and Literature class at Aga Khan Academy Mombasa, this study was conducted in 4 reflective cycles where a cycle was implemented every week. After each cycle, the researcher conducted a reflective session that aimed at documenting the strengths and the weaknesses of the lesson and therefore of improving every next cycle of using HOQs.

4. Findings

Cycle 1 Activity and Reflection

- Ask students to talk to each other on anything that strikes their attention as they read the text or think about a certain topic.
- The teacher samples a few comments and at this point not strict on repetition of comments.
- The teacher issues pre-prepared HOQs that use command terms to be answered in groups
- Groups respond to the HOQs through a representative/randomly picked member.

The initial brainstorming activities was very successful in creating a conducive environment and getting every student to talk about the topic at hand. Research supports that students should be engaged in brainstorming activities which help to teach them ideas and solution generation (Chinedu et al., 2014). Most students quickly rushed to finding out knowledge that could be recalled from the text with a few attempting to give their opinions. While working on prepaid questions, students seemed to be shallow in their responses as they lacked a detailed justification of arguments and although the questions were of high order, the responses were often less engaging. Students seemed to lack a 'culture' of explaining things in depth rather than the ability to do so.

Cycle 2 Activity and Reflection

- Ask students to talk to each other on anything that strikes their attention as they read the text or think about a certain topic.
- The teacher samples a few comments and at this point not strict on repetition of comments.
- The teacher issues pre-prepared HOQs that use command terms to be answered in groups. Students are given the glossary of command term as a reference resource.
- In groups, students first discuss the demands of the HOQs then respond to them through a representative/randomly picked member.

In cycle 2, the fact that students had to first discuss the demand of the questions helped many groups to provide more detailed and critical responses to the questions that demanded them to analyze, evaluate, and create. The discussion took longer than it was planned for because students had good HOQs beyond the ones provided. At this stage, there was need to give students an opportunity to formulate their own questions too.

Cycle 3 Activity and Reflection

- Ask students to talk to each other on anything that strikes their attention as they read the text or think about a certain topic. The teacher samples a few comments and without being too strict on relevance.
- In groups of 4, students are given the glossary of command terms as a reference resource and asked to formulate HOQs about the reading.
- The teacher issues pre-prepared HOQs which students compare with their own and add new questions that are missing in the teacher HOQs. Each group is assigned one question plus the added questions in timed discussions.
- Students are informed in advance that they will first discuss the demands of the HOQs then respond to them through a representative (i.e. a randomly picked member).

Although students' own questions were a great addition to the lesson, many struggled to construct good HOQs and needed more scaffolding. Students included most of the questions in the teacher's list and were encouraged not to see it as a marking scheme but 'possible questions. A reference glossary of command terms should be accompanied with sample HOQs. Understanding the demands of the questions and timing the discussions helped the students focus and give critical responses. Higher-order thinking requires students to really understand a concept, not repeat it or memorize it. This supports the research viewpoint that students should be encouraged to elaborate their answers and talk about what they are learning (Cox, 2019). Some randomly picked students were not able to engage with the group responses. Students should be required to make notes of their own group's questions and responses so that they are able to personalize whatever they learn from the group. Each member of the group should also be given an active learning role so that they are able to contribute significantly to their group tasks.

Cycle 4 Activity and Reflection

- Ask students to write then talk to each other about anything that strikes their attention as they read the text or think about a certain topic. The teacher samples a few comments and without being too strict on relevance.
- In groups of 4 students are given the glossary of command terms and 4 sample HOQs as reference resources and asked to formulate their own HOQs about the topic/reading. Through the think-pair-share, each student should lead a discussion on one HOQ and come up with one HOQ that members of the group can help improve. In addition, students should take notes of their responses and questions.
- The teacher issues pre-prepared possible HOQs which students compare with their own and add new questions that are missing in the teacher HOQs. Each group is assigned one question plus the added questions in timed discussions.

- Students are informed in advance that they will first discuss the demands of the HOQs then respond to them through a representative/randomly picked member. Responses are limited to 2 questions per group.

With the introduction writing before talking to each other, there were less repetitions and whole class participation because everyone had something to say. The sample HOQs also helped to guide students construct better questions. This is in line with research that teachers should model the types of questions that demand deeper thinking (Spencer, 2017). Assigning an active role to each student, where they led discussions and constructed their own questions to be critiqued in the group, helped personalize learning. Through note taking, students are more confident to actively participate in class with less 'I forgot what I wanted to say' or 'never mind'. Students should be allowed to write more questions than can be answered in class hence making learning an inquiry cycle. Students come to the lesson with some curiosity, they should be even more curious when they leave but this time round curious of new ideas.

5. Conclusion

This study concludes that in an effective lesson employing HOQs, brainstorming is a very key part of the lesson because it helps to free students and empowers them as thinkers rather than be complacent learners. Students should always be given the opportunity to share their ideas with someone or/and the class before each lesson concludes. Each student should be given an opportunity to formulate HOQs by not only being provided with reference materials such command terms and sample HOQs but also receiving peer and teacher feedback. Besides being empowered to ask HOQs, students need to be exposed to the demands of such questions and therefore learn how to answer them, otherwise, it will be pointless to ask these questions and not know how to effectively respond to them. This action research suggests that it is better for the students to leave the lesson with more questions as a culture that makes them life-long learners rather than having 'all' their questions answered. This study also concludes that HOT tasks should not be secondary to students first understanding the basics but should rather be engaged as soon as the concepts are introduced during the lesson.

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