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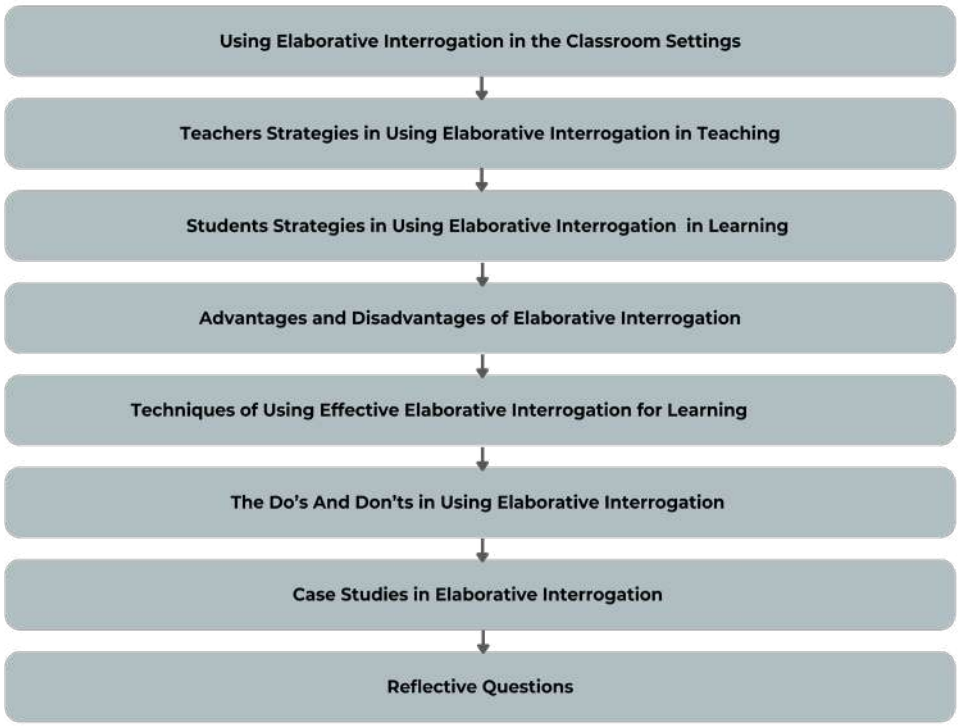
20.1. Concept Map



20.2 Learning Outcomes

After studying this chapter, you should be able to:
1. Explain the use of elaborative interrogation in learning.
2. Identify how a teacher, lecturer, or instructor uses elaborative interrogation to promote knowledge acquisition.
3. Categorise a learner's strategies for using elaborative interrogation to advance learning.

4. Apply the techniques of elaborative interrogation in practice.
5. Discuss your creativity in using elaborative interrogation to improve learning.

20.3 Clarification of Key Terms

Elaboration: This is the extent to which a learner is willing to expound, think, process, practice, revise, review, and respond to a concept or topic learned in the classroom. A learner's active interest in interrogating the concept determines the scope to which they can generate their thoughts and ideas, as well as how they can crystallise or conceptualise the acquired knowledge for better understanding. The generation and processing of these thoughts or ideas will vary depending on the mental effort the learner is ready and able to apply, based on their previous knowledge and interests. Many learners, based on personality differences and uniqueness, actively rehearse the topics they have learned from their teachers, lecturers, or instructors during prior educational engagements. This follow-up action promotes active learning in the student. Conversely, some learners hardly give active attention to the concepts or topics they have learned, which leads to a passive approach to learning and limits their ability to expand on the knowledge acquisition process. Therefore, active attention, as opposed to passive or selective attention, impacts a student's ability to elaborate on what has been learned. Consequently, the extent of elaborative interrogation effort by the learner results in varying learning outcomes in the acquisition of knowledge.

Elaborative Interrogation: This is described as the active attention that a teacher, lecturer, or instructor and a learner focus on the topic studied in the classroom. For a teacher, lecturer, or instructor and a learner to successfully perform an elaborative interrogation, they must engage in active mental processes. These processes enable both the teacher and the student(s) to crystallise their knowledge as they further interrogate the topic being taught and learned. These mental processes include, but are not limited to, the elaborative interrogation strategies used by the teacher in the methodology and the teaching of the subject matter, as well as the learner's active interest in further inquiry on the topic learned.

Classroom Settings: This is reflected in physical, virtual, and hybrid classrooms, where many educators, such as teachers, lecturers, instructors, school administrators, and educational psychologists, engage with diverse categories of learners across different levels, including elementary schools, secondary schools, tertiary institutions, and post-tertiary classroom settings (Adu and Zonto, 2024; Ahmad and Mohebi, 2024).

20.4 Introduction

Teachers, lecturers, and instructors use different strategies to present logical concepts or any subject matter in the delivery of knowledge to their learners. These strategies are of great significance, especially in providing support for all categories of learners in the classroom. One effective strategy for enhancing learners' memory to achieve successful learning is the elaborative interrogation strategy. This strategy equips learners with critical thinking abilities, enabling them to gain comprehension of the different topics they are being taught.

It is based on providing additional information or paraphrasing to clarify the meaning of unfamiliar concepts. This chapter is guided by the elaboration theory of Charles M. Reigeluth, which views the delivery and acquisition of instruction at the macro level of organisation in four dimensions, namely: i. Selection, ii. Sequencing, iii. Synthesising, and iv. Summarising of subject matter content.

The present chapter aims to clarify what elaboration is, explain how elaborative interrogation is conducted, and discuss the effective use of elaborative interrogation in classrooms by teachers, lecturers, and instructors, as well as by learners. Deliberate attention is given to the discussion of elaboration in learning and elaborative interrogation in the classroom. The chapter also provides a diagrammatic model for elaborative interrogation in learning, detailing the effective use of elaborative interrogation strategies by teachers, lecturers, and instructors in the classroom. Furthermore, it explores how learners can prepare productive elaborative interrogation strategies. The chapter also explains some of the advantages and disadvantages of elaborative interrogation, as well as techniques for using effective elaborative interrogation strategies for learning. Additionally, it outlines the dos and don'ts of using elaborative interrogation in teaching and presents case studies in elaborative interrogation as templates for teachers, lecturers, and instructors to achieve the desired expectations for their students' academic performance or award-winning learning outcomes from virtually all learners in the mobile world (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013).

20.5 Elaborative Interrogation Learning Strategies

The use of elaboration in learning is a productive memory exercise that strengthens a learner's ability to acquire knowledge, thereby enhancing memory functioning. Before any information can be encoded, stored, and retained in human memory, numerous active mental processes and consolidations must occur. These processes involve various mental activities performed by the learner, such as concept mapping within both non-declarative and declarative memory, facilitating learning at different levels. (Kahl and Woloshyn, 1994).

There are several strategies to enhance the teaching and learning of elaborative interrogation in the classroom. The two discussed in this chapter are the teacher/lecturer/instructor's elaborative interrogation strategies for teaching and the learner's use of elaborative interrogation for improved learning.

20.5.1 The Teacher/ Lecturer/ Instructor 's Elaborative Interrogation Strategies

a. Mastery of concept to be taught.
b. Who are my learners?
c. What are the objectives for teaching this concept?
d. What are my instructional aids for knowledge delivery?
e. Medium of delivery of concept to sustain learners' interest.
f. How do I get feedback that my learners actually are motivated by this concept?

(See as illustrated in figure 20.1. Model 1 for teacher/ lecturer/ instructor s and explained further in the Chapter)

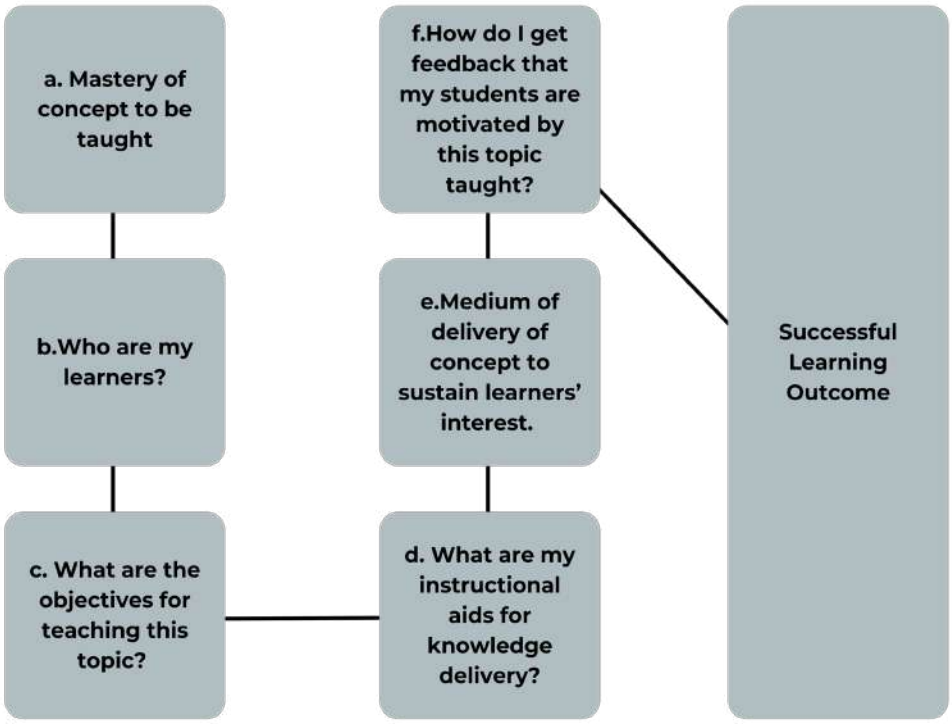


Figure 20.1 Teacher/ lecturer/ instructor's Elaborative Interrogation Strategies. (Source: Authors, 2023)

20.6 Teacher/ Lecturer/ Instructor 's Elaborative Interrogation For Teaching In The Classrooms

a. **Mastery of subject matter to be taught:** The teacher, lecturer, or instructor should already incorporate into their teaching the necessity of effectively disseminating information on the concept to be taught. Adequate preparation for the lesson or lecture plan is essential. It is important to prepare a holistic view of how the

concept is intellectually, socially, psychologically, and cognitively beneficial for the learners. Therefore, the teacher, lecturer, or instructor should build on the learners' previous knowledge.

b. **Medium and delivery of concept to sustain learners' interest:** The classroom environment must be both physically and psychologically conducive to support the day's teaching and learning processes. The educator must pay positive attention to each learner, even during group discussions. The teacher, lecturer, or instructor should begin with known, specific, inductive, and relatable examples of the subject matter before transitioning to more general, deductive concepts. This approach encourages learners to engage in self-discovery methods, self-explanation of the concepts learned, peer dialogue, or peer tutoring. These strategies further enable learners to employ elaborative interrogation in their learning.

c. **What are my instructional aids for knowledge delivery?**
To actively engage learners, the teacher/lecturer/instructor must put necessary instructional aids into perspective based on the concept to be taught. These include the use of visual aids (pictorials), auditory aids (sounds, appropriate verbal stimulation), and tactile aids (real objects that are learner-friendly). Materials for illustration, where necessary, may include colour, paints, drawings, and references to online media, where additional information on the concept can be accessed. The teacher should prepare to stimulate the learners' ability to create concept maps and memory traces for the information to be delivered. The use of technological devices and apps for additional information on the concepts taught is equally important in employing elaborative interrogation for better learning.

d. **Who are my learners?**
When the teacher, lecturer, or instructor considers the active audience in terms of learners' age, gender, cognitive ability, personality differences, readiness to learn, language, and learning styles, as well as the various types of learners in the classroom—such as fast learners, average learners, slow learners, and gifted learners—they can effectively plan activities for personal idea generation across all levels. This approach enables the educator to encourage all categories of learners to participate in generating their own ideas about the new concept being taught.

e. **What are the objectives for teaching this concept?**
At the end of the lesson, the educator should be willing to engage each learner in a self-explanation of the concept learned. This would enable the teacher/lecturer/instructor to assess how well the learners have acquired the desired or expected learning outcomes.

f. **How do I get feedback that my learners are motivated by this concept?**

Evaluation of concept understanding can be assessed at both the individual and group levels using the following methods:

- Show and tell on the concept learned.
- Report presentation on the subject matter
- Intergroup debate on the subject matter.
- Excursion to places that elaborate on the concept taught/learned.
- Testing the learner's comprehension through oral or written reflective questions
- Quiz and debate (intergroup in the class).

20.7 Preparing A Productive Elaborative Interrogation Learning By The Learners

The learners' actions, having been taught with elaborative interrogation strategies in the classroom, are influenced to do the following:

- Active attention to the topic.
- Encoding (note-taking or writing notes).
- Storage (of encoded information)
- Rehearsal (reviewing, revising, re-writing, repetition)
- Retention (recalling or retrieving information)
- Application (using acquired knowledge)

(See as illustrated in figure 20.2. Model 2 for learners and explained further in the Chapter)

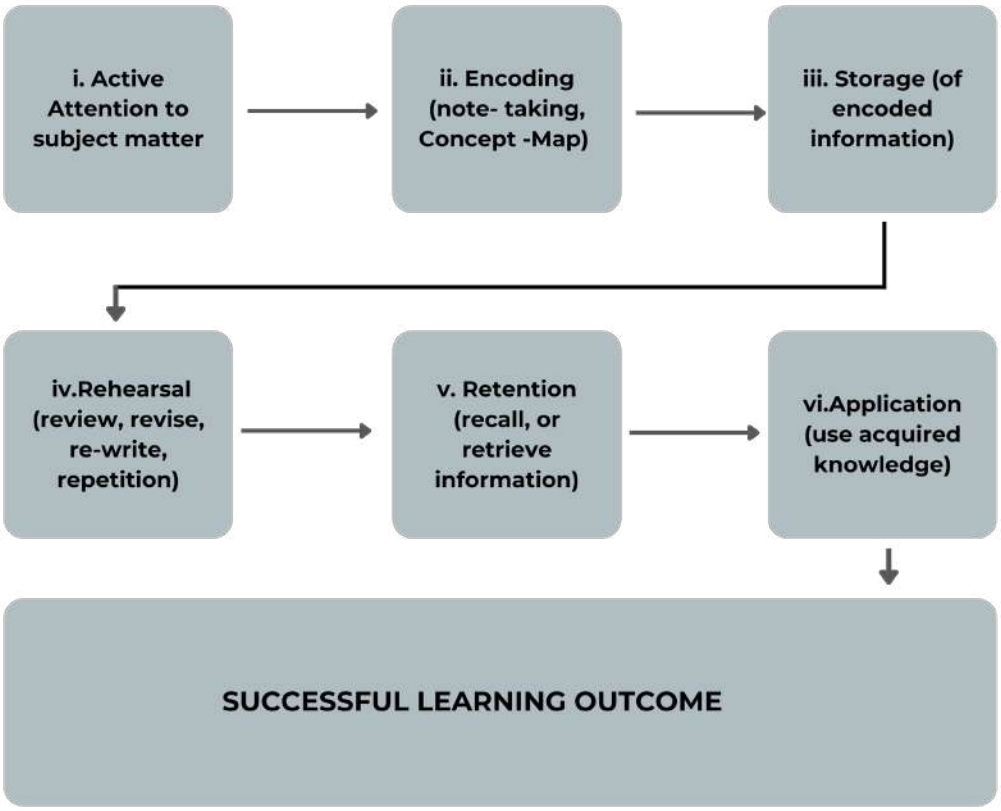


Figure 20.2 Learner's Elaborative Interrogation Strategies. (Source authors, 2023)

i. **Active attention:** The first major step before a learner can elaborate on any topic learned is to receive the information being taught with focused attention. This requires that all aspects of the learner's mental processes—such as memory, concentration, undivided attention, and interest—are fully engaged to absorb the information being presented in the classroom.
ii. **Encoding:** In the classroom setting, many factors aid learning, including adequate comprehension of information. When a learner can properly understand the information being presented, they can effectively prepare memory traces and concept maps for that information. This process helps the learner store the information for later use. The encoding of information for future retrieval begins with the learner writing notes for later revision.
iii. **Storage:** The storage of information by the learner is a process of consolidating knowledge acquired in long-term memory. The student stores information by employing mental processes, such as creating mental images or traces for various types of information, including visual, auditory, tactile imagery, and even sensations associated with taste. For improved recall, the learner can review these mental traces or images repeatedly through repetition.
iv. **Rehearsal:** This is the active process whereby the learner can review the concept learned and revise it through critical thinking, self-explanation, questioning, and repetition of the entire process from the beginning using his or her own words.
v. **Retention:** A learner's ability to retain information about a topic includes using repetitive revision methods. Repetition strengthens a learner's memory, enabling them to recall, retain, and reproduce knowledge in diverse and relevant ways with greater creativity and innovation.
vi. **Application:** After a learner has mastered the intellectual processes of giving attention to information and encoding it for memory traces and storage, they can access that information repeatedly and build on the process to enhance the application of knowledge and skills for their own benefit and that of others in their environment.

20.7.1 Advantages Of Elaborative Interrogation Learning

- Elaborative interrogation learning helps promote better comprehension of the topic taught or learned due to the vivid analogies used to create memory traces for the learner. Therefore, it is particularly useful for enhancing the retention of sequences or processes, such as the cognitive processes involved in learning, and empowers the learner's memory functioning.
- Elaborative interrogation learning helps learners achieve mastery over the new knowledge acquired. "The more you can explain about the way your new learning relates to your prior knowledge, the stronger your grasp of the new learning will be, and the more connections you create that will help you remember it later" (Brown, Roediger & McDaniel, 2014).
- Repetition of the concepts learned through the learner's own self-explanation, revision, and rehearsal further enhances the learner's interest in knowing more. Active learning or active processing produces the most powerful and flexible learning.
- Elaborative learning encourages learners to take responsibility for their quest for knowledge acquisition, promoting self-reliance in the learner.

20.7.2 Disadvantages Of Elaborative Interrogation Learning

- Learners may find elaborative interrogation learning most challenging to apply to lengthier or multifaceted concepts.
- Elaborative interrogation learning appears to be durable for sustained learning when the learner has a schema for prior knowledge. However, when there is no prior knowledge, the learner may struggle to use elaborative interrogation unless they develop a schema for the new subject matter.
- Elaborative interrogation learning may be difficult to apply to laboratory-based instructions, thereby limiting its applicability in certain cases.
- Elaborative interrogation requires the learner to dedicate time and active attention to the topic being learned. It can become a disadvantage for the learner to use this strategy if the student cannot cope with the required effort.

20.8 Disadvantages Of Elaborative Interrogation Learning

Every learner can effectively use elaborative interrogation in their learning by applying the following techniques:

20.8.1 **Notes taking:** Regularly writing down ideas is very important for learners, as it helps exercise the hippocampus, which facilitates active responses to retention, recollection, and the activation of imaginative activities. Studies show stronger brain activity after writing on paper compared to using a tablet or smartphone (Umejima, Ibaraki, Yamazaki, Kuniyoshi, & Sakai, 2021). Teachers, lecturers, and instructors should provide activities that motivate learners to practice note-taking for further inquiry on the topics taught in class.

20.8.2 **Self-explanation in the learners' own words:** Using one's own words to elaborate on a subject matter helps a learner develop a better comprehension of that topic (Kim, 2003). Teachers, lecturers, and instructors in the classroom setting should motivate learners to express the concepts or topics they have learned using their own words. This can be achieved through methods such as concept report writing, show and tell, book reviews, discussions, discovery learning, seminars, and presentations of case studies.

20.8.3 **Regular use of mnemonics to shorten long lists of concepts:** Regular use of word chunking or mnemonics strengthens the retention of information for learners. For example, in the English language, the parts of speech (Noun, Adjectives, Pronouns, Verbs, Adverbs, Prepositions, Interjections, and Conjunctions) can be easily recalled using the mnemonic NAPVAPIC, where N stands for Noun, A for Adjectives, P for Pronouns, V for Verbs, A for Adverbs, P for Prepositions, I for Interjections, and C for Conjunctions. Another variant is NAPVAPAC, which includes Article instead of Interjections. Using mnemonics also helps learners acquire a large amount of information, thereby building their knowledge (Kim, 2003).

20.8.4 **Weekly test and feedback:** Classroom teachers, lecturers, and instructors could use the technique of conducting regular tests and providing feedback on scores, allowing learners to assess their knowledge. This approach would intrinsically motivate learners to prepare in advance for the tests, thereby promoting their interest in sustaining discovery learning regarding previously taught topics.

20.8.5 **Quiz and Class Debates:** Most learners are positively motivated to learn when their lecturers and instructors use creative, stimulating challenges, such as quizzes and debates, as inter- or intra-class activities. This assists learners in studying ahead, which invariably broadens their level of comprehension of topics covered in a term or semester.

20.8.6 **Elaborative method (5W's & How):** The elaborative method (5W's & How) can be used by teachers, lecturers, and instructors to clarify the connection between the subject matter and the objectives of the concept being taught to learners. Teachers, lecturers, and instructors should use guided questions that are relatable to the learners in the class. Every focused attempt to answer these questions, based on further interrogation and reading, will help students learn more about the importance of the 'topic' or 'concept' taught in the classroom.

20.9.1 Dos In Elaborative Interrogation Learning

- Every learner must believe that "I can acquire more knowledge in any subject matter if I put my mind to it."
- As a learner, you must be mindful of following up on a review of what has been learned in a subject matter every day. This enables you to create active memory traces and a concept map to interrogate further.
- Every learner must understand his or her own learning style (whether you are a visual, auditory, kinaesthetic, or verbal learner). Your preferred learning style will help you to engage in elaborative interrogation in the best way that works for you.
- Give full attention to the learning activities in the classroom, including obtaining complete information from the teacher, lecturer, instructor, or the medium of knowledge delivery.

20.9.2 Don'ts In Elaborative Interrogation Learning

- Be a proactive learner: Don't procrastinate! Use your time effectively to follow up on any subject matter learned previously.
- Don't give up on your 5 W's and HOW of any subject matter (What is the concept saying? Why is this concept so? Where to apply the concept? When to apply it? Who is the concept useful for? How to monetise the concept?
- No idea is foolish. Don't look down on your ideas. Be bold enough to share your thoughts in class; this will create opportunities for further elaboration on the subject matter.
- Don't be a passive learner: Avoid behaviours that can hinder your learning activities, including missing out on full information from the teacher/lecturer/instructor or the knowledge delivery medium due to noise, distraction, divided attention, or selective attention.

20.10 Case Studies In Elaborative Interrogation Learning

20.10.1 Case Study One

Bimpe, a 200-level agricultural science undergraduate, has never been to a farm in her life. Today, her class has been introduced to "AGR 203: Farm Practice 1" by one of her lecturers. The title of the class discussion is "Importance of Yam Production." This topic caught Bimpe's attention, and she listened with rapt focus in class. Although she has never been to a farm in her life, neither has she attempted planting yam tubers before.

However, she knows that 'pounded yam eaten with vegetable fish soup' is a delicious dish in Osun State, her hometown in Nigeria.

The lecturer explains that "yam production is considered a good source of food security and provides job engagement for many people in areas where it is cultivated. Yam is among the major cash food crops and one of the most consumed foods in West African countries like Nigeria, Côte D'Ivoire, Ghana, Benin, and Togo." The lecturer continued, then she asked further questions. Examples of the questions include:

"What is yam?"
"How many of you have eaten yam before?"
"How do we get yam?"
"Why do we need to cultivate more yam on our farms?"
"How useful is yam to the consumers?"
"Where do we plant yam?"
"When do we plant yam in the year?"
Most of Bimpe's course mates had answers to these questions. However, observations show that some of the learners could not provide desirable answers to the discussion in class, including Bimpe.

Hence, Bimpe's lecturer provided them with questions as a guide for further study.
When Bimpe returned to her room in the hostel, she took out her course notes for the four classes she had attended that day. She decided to start with her AGR 203, following the study guidelines for her assignment: "What is yam?"

"How do we get yam?"
"Why do we need to cultivate more yam on our farm?"
"How useful is yam to consumers?"
"Where do we plant yam?"
"When do we plant yam during the year?"
"Identify five importance of yam production."

The elaborative method (5W's & How) used here aids in clarifying the connection that exists between the subject matter (yam) and the importance of the concept of food for humans. The guided questions are relatable for the learners in the class, and every focused attempt to answer each question based on further exploration and reading will help them learn more about the significance of yam production.

20.10.2 Case study two

An erudite lecturer decided to check her 300-level learners' comprehension in a developmental psychology faculty course. She notified the learners at the beginning of the semester, after they had been given the courseware and the lecture activities had been explained. The lecturer further explained that the inter-departmental quiz would attract a substantial reward for the five best learners from each of the five departments running the course for that semester.

At the end of week 8, a population of 75 learners in the class participated in the inter-departmental quiz challenge on eight topics that had been covered in the classroom.

Observations showed that most of the learners from each department engaged more in discovery learning based on the topics the lecturer had taught them prior to the quiz, in order to perform well.

Findings from the quiz scores also indicated that 70% of the classroom population reviewed their notes and lecture materials to be able to represent their department effectively. Furthermore, the lecturer reported that consultations between lecturers and learners on topics outside the scheduled lecture days had increased as the learners prepared for the quiz.

These two case studies emphasise that teachers, lecturers, and instructors can utilise active elaborative techniques such as quizzes, debates, seminar presentations, show and tell, the '5 W's and How', and case studies in the teaching and learning processes to enhance effective learning among learners.

20.11 Conclusion

This chapter emphasises that elaborative interrogation strategies have a positive effect on enhancing comprehension and knowledge acquisition for every learner. Likewise, for elaborative interrogation to be more effective, teachers, lecturers, and instructors must use elaborative strategies to promote knowledge acquisition.
In addition, elaborative interrogation in learning promotes active memory exercise, which helps learners expound on previously acquired knowledge and elaborate on new subject matter, leading to better application of successful learning outcomes in the wider world. It is also suggested that these strategies can be safely incorporated and adopted in various teaching and learning areas. Many educators, school administrators, counselling psychologists, lecturers, instructors, parents, and educational stakeholders would find this chapter scholastically enriching, and it can be adopted by teachers and lecturers to enhance basic and tertiary educational practices across all subjects and courses for diverse learners in their classrooms. The regular use of elaborative interrogation strategies promotes best practices in the classroom, improving effective learning and successful outcomes for all learners at every level of education.

20.12 Reflective Questions

1. What is elaborative interrogation in learning?
2. How can elaborative interrogation be used in teaching?
3. How can a teacher, lecturer, or instructor use elaborative interrogation to promote knowledge acquisition among learners?
4. Identify the steps a student can take to utilise elaborative interrogation strategies.
5. Explain how a teacher, lecturer, or instructor can apply the techniques learned during practice.
6. As a learner, discuss your creativity based on elaborative learning.

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