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BLENDING CRITICAL THINKING SKILLS WITH THE TEACHING OF SUBJECT MATTER: CASE OF A GEOGRAPHY LESSON IN A MALAWI SCHOOL

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Abstract

Critical thinking skills are essential in education. Unfortunately, education policymakers and curriculum developers in Malawi have

not given a concerted effort to promoting critical thinking skills in schools. OSISA has indicated that there is no clear evidence in the Malawi primary and secondary school curricula that promoting critical thinking is considered important. In this paper, we examine the definitions of critical thinking, creative thinking, reflective thinking and we are of the view that there is a level of overlap amongst them. We also look at how the behaviours of egocentrism and sociocentrism can undermine critical thinking. The study draws on Piaget and Vygotsky's theory of (social) constructivism to advance approaches and practices that teachers can employ to promote critical thinking in learners. We develop a lesson plan that incorporates critical thinking skills and show how teachers can correct egocentric and sociocentric tendencies that might impede critical thinking in learners. We claim that students equipped with critical thinking skills can contribute intellectually, socially, culturally and economically to society.

Key words*: critical thinking, social constructivism, lesson plan, egocentric, sociocentric*

Introduction

In this article, we intend to show how a teacher can simultaneously teach subject content and promote high order critical thinking skills in learners. Our objectives are twofold: to demonstrate how high order cognitive tasks can be used to promote higher order critical thinking and to show how egocentric and sociocentric tendencies can be corrected through critical thinking using a Geography lesson as an example.

Research in Malawi, South Africa and Nigeria, for example, clearly demonstrate a need for teaching critical thinking in schools. The Open Society Initiative for Southern Africa (OSISA) (2011) observes that the Malawian education system has not made provision in the curriculum for the teaching of critical thinking skills depriving learners of essential skills they need to be contributors to the development of the country.

Similarly, Letseka and Venter (2012) argue that many learners in the South African educational institutions lack the skills of critical thinking. In trying to promote critical thinking, they recommend that Philosophy should be taught from an early stage such as in primary schools. In Nigeria, Owolabi (2003) makes similar observations. He decries that schools in Nigeria have not produced citizens who can take reflective decisions on their own, partly because schools examine lower cognitive abilities rather than higher ones. He recommends that schools should teach critical thinking for the betterment of the citizenry.

According to Fisher (2006) and Choy & Oo (2012), our rapidly changing environment needs more and more people who can apply such skills so as to make worthwhile decisions that can contribute to solving the many problems that the world faces presently (Gough, 1991). This need is even starker in Malawi secondary schools as no clear strategies seem to be in place to promote critical thinking (OSISA, 2011), yet the country is open to increasing inflows of new knowledge and technologies.

As opposed to the tradition of Critical Theory, this article follows the tradition originating from Analytical Philosophy. There is no universally acceptable definition of the term "Analytical Philosophy". There is on-going controversy over whether to follow Cambridge originated Neo-Hegelian Absolute Idealism or the logical empiricism of the Vienna Circle or the post-war Oxford analytic philosophy or the American logical pragmatism (Hacker, 2005). Therefore we will not bother offering a definition. For purposes of this article, it suffices to only give an idea of what sort of common elements the term includes. According to Longworth (n.d.) and Hacker (2005) Analytical Philosophy includes the analysis method of seeking to understand a subject matter by coming to understand its composition. It has commitment to realism and the ideals of clarity and rigor. It aims at truth and knowledge. Broadly speaking, this article reflects some of these common elements.

The article is divided into four sections. The first section discusses the concept of critical thinking. The second explains how egocentrism and sociocentrism interact with critical thinking. The third fourth utilises the theory of social constructivism as advanced by Piaget and Vygotsky to advance approaches and practices that can promote critical thinking in learners. The fourth section develops a Geography lesson plan to show how a teacher can simultaneously teach content and critical thinking skills followed by a conclusion.

Critical thinking

Critical thinking is a contested notion and has been defined differently by different scholars. Because of its complexity no one authority can provide a universally acceptable definition. Fisher (2006) and Sasson (2007) contend that creative thinking is a process that permits one to think without restrictions. This process can also be referred to as brain storming that searches for alternatives.

Although Choy and Oo (2012) think that reflective thinking is a subset of critical thinking, Samuel (1999) believes it is distinct. Reflective thought or metacognition is thinking about what one is thinking and then using this awareness to control what one is doing or thinking. In other words it is recursive and self-corrective thinking.

In this paper we have attempted to fuse ideas of critical thinking, creative thinking and reflective thinking from Cottrell, (2005); Moore and Parker, (2000); Fareed and Waghid, (2005); and Rudinow and Barry, (2008) to come up with the following description of critical thinking: critical thinking can be viewed as the ability to apply reasoning and logic to unfamiliar ideas/opinions and situations, which involves seeing things in an open-minded way by using cognitive skills or strategies that increase the probability of a desirable outcome. Critical thinking is thus purposeful, reasoned and goal-directed and is the kind of thinking involved in solving problems, formulating

inferences, calculating likelihoods and making decisions. More so, critical thinking can be seen as the ability to think rationally where rationality requires analysing all known evidence and not leaving something out because one does not like it. For purposes of this discussion, we define critical thinking as a type of thinking that will advance one's goals in life and prevent one from falling into situations that will not serve one's and/or others' best interests.

Further, in this paper, we use the term critical thinking to include other forms of thinking skills, such as self-sensorship against tendencies of egocentrism and sociocentrism. Das and Kramer (2013) provide two definitions of the term 'self sensorship', such as; it is the act of preventing oneself from speaking or the act of filtering one's thoughts prior to sharing them. The authors say that self sensorship can even prevent one from thinking or articulating thoughts. In a study that covered five million English-speaking facebook users who lived in the USA and UK over a period of 17 days, they found out that 29 per cent of the sample did not self-sensor regarding what they posted on the social media for appropriateness. Inability to self-sensor may be an indication of a mind-set that they are entitled to say what they want regardless of what others think. This kind of mind-set in some ways reflects the egocentrism and sociocentrism that tends to affect critical thinking. In the following section, we discuss how egocentric and sociocentric mechanisms have the potential of impeding critical thinking.

Conceptualising egocentrism and sociocentrism in relation to critical thinking

According to Paul and Elder (2008), persons operating at an egocentric stage see their point of view as reality. They are usually not tolerant of other people's views; instead they behave as if they have the monopoly of truth. Beattie (2003) observes that persons operating at this stage tend to be tendentious. Stated differently, they tend to think that every thought is true and every desire deserves to be satisfied and therefore everybody must support them. Paul (in Binker

& Charbonneau, 1983), and Paul and Elder (2008) also observe that some people tend to hold a sociocentric world view, which opines that one's way of seeing things is the only way. We contend that a person with egocentric and sociocentric type of thinking would face problems in a society that expects him/her to behave in a certain socially acceptable manner. It is thus imperative for educators to train for critical thinking in the classroom to correct such behaviour in learners in secondary schools.

Piaget's theory further holds that secondary school learners, (age ranging between 12 and 20) are in the formal operational stage where they should be able to engage in reflective abstraction, which is the ability to think beyond the observable and results in mental reorganisation (Wadsworth, 1989). A person at this stage should be able to reason and think about the hypothetical, to reflect on one's own thinking and, therefore, on the possible as well as the real (Mwamwenda, 2004). In other words, persons in the formal operational stage should be able to critically assess what they are about to do and relate to its possible consequences. If the theory about formal operational stage is correct, it is surprising how learners in this stage can indulge in unbecoming behaviour that may cost them suspension, expulsion or even imprisonment (Malawi Voice, 2013). One possible explanation of such behaviour may be because the school management might have provoked them. Even if this were the case, such behaviour is unjustifiable because it hurts not only them but the other people as well. If they had considered the consequences of their behaviour they probably not have gone ahead.

Paul (in Binker & Charbonneau, 1983) points out that although egocentrism is typical in babies, it continues to function in adults as well. Since educational institutions have rules and regulations that learners must abide by, learners with egocentric mind-sets would find it difficult to cope in such environments. Egocentric and sociocentric mind-sets may explain why some learners tend to make decisions that a critical thinker may consider as questionable and irresponsible. The

following section briefly explains some indications of faulty thinking amongst learners in secondary schools in Malawi.

Approaches and practices that can promote critical thinking in learners

Ritchhart (in Ferlazzo, 2011) holds strong views about the centrality of a school and the teacher in advancing critical thinking. Hove (2011) too supports the central idea that critical thinking skills depend heavily on formal learning and therefore schools are critical instruments for advancing critical thinking amongst learners. They argue that much of what it takes to develop critical thinking comes from a skilled teacher. Indeed we argue that one of the skills a teacher must acquire is how to apply the theory of social constructivism in facilitating and stimulating learning.

Jean Piaget and Lev Vygotsky were instrumental in developing the concept of constructivism. Piaget claimed that learner's need to understand their environment motivates them to investigate and to construct theories that explain it. Piaget added that social interaction with others stimulates the construction of new ideas (Arends, 2004). This led to the theory of social constructivism. In summing up the idea of constructivism, Piaget underscores that good pedagogy:

> Must involve presenting the child with situations in which (he or she) experiments, in the broadest sense of that term - trying things out to see what happens, manipulating things, manipulating symbols, posing questions and seeking (his/her) own answers, reconciling what (he/she) finds one time with what he/she finds at another, comparing his finding with those of other children (Duckworth in Arends, 2004, p. 396-397).

Piaget seems to recognise the importance of a learner interacting with others; an idea which Vygotsky articulates well. Vygotsky (Moore, 2000) views teaching and learning as social activities that take place

between members in a socially constructed situation. Furthermore, he recognises that use of language is central in the process of interaction. In other words, thought is expressed through language and that one can learn from others largely through the medium of language. In Vygotsky's views, social interaction and language are therefore key to learning, not only, subject content but can also be vehicle for learning critical thinking skills.

There are many benefits of teaching critical skills in schools. Alwali (2011) mentions that critical thinking can sharpen student decision making, problem solving and improve personal choices. In addition, Ganly (2010) alludes to three benefits, among others. These are: critical thinking allows people to ---

- reach their goals without damaging any other area of their interest;

- make clear choices that they can be happy about;

- take many things into consideration in relation to their decision.

Social constructivist perspectives are currently widely used in educational institutions. Any constructivist learning environment must provide the opportunity for active learning. Tam (2000) highlights the following three basic principles of creating a constructivist learning environment, which must be considered when implementing constructivist instructional strategies: Knowledge will be shared between teachers and learners, and learner and learners; the teacher's role is one of a facilitator or guide and learning groups will consist of small numbers of heterogeneous learners.

In implementing Tam's principles, a teacher can adopt certain strategies to create a constructivist learning environment that can deliver subject content and simultaneously promote critical thinking in learners (Ferlazzo, 2011; Carrol, 1989; and Cottrell, 2005). For example, a teacher can:

- create a classroom environment that is free from threats, that encourages acceptance of diversity, mutual respect and the teacher is a co-learner;
- promote metacognition through more speaking, reading, and listening;
- promote reflective thinking through reading and talking by encouraging them to ask questions;
- acknowledge learners' ideas even when they may be controversial;
- challenge learners' ideas with the purpose of helping them to improve them; and
- give learners challenging work.

The above strategies can achieve the desired results through a mixture of certain teaching methods and approaches presented below. These strategies and approaches set stage for social interaction between learners, and learners and teacher where the aim is to create an environment where individuals can construct and internalise knowledge. In addition to being a vehicle for delivering subject content, the following approaches can also promote critical thinking skills in learners (Adu-Febiri, 2002; Bass Jr. & Perkins,1984; Ijaiya, Alabi & Fasasi, 2010):

- group activities/cooperative learning *(Abbreviated GA under Learner Activity in Table 1);*
- case studies/field work *(Abbreviated FW under learner Activity in Table 1);*
- deal with /solve a real life problem/issue *(Abbreviated PS under learner Activity in Table 1);*
- advocate ambiguity: do not give learners clear material. Give them conflicting information that they must figure out how it works or how to resolve it *(Abbreviated AMB under Learner Activity in Table 1);*
- use multi-sensory teaching to challenge learners to think *(Abbreviated MS under Learner Activity in Table 1);*

- ask high order questions, such as "how---", "why---", and "what if ---" *(Abbreviated HOQ under Learner Activity in Table 1);*

Table 1shows the stages at which the teaching strategies and/or approaches are used and what the corresponding effect is in terms of critical thinking and how the effect of negative factors (egocentrism and sociocentrism) are minimised. Paul (in Binker & Charbonneau, 1983) and Beattie (2003) demonstrate that egocentrism and sociocentrism can distort one's thinking and that there is need to correct such distortions. Minimising egocentrism and sociocentrism is expected to enhance critical thinking.

An example of a lesson plan that guides subject content delivery and promotes critical thinking

The following lesson plan attempts to use the ideas of social constructivism. In addition it attempts to advance critical thinking skills in Geography learners through a constructivist approach. This is an approach which Vygotsky feels should be encouraged as he affirms "instruction in a given subject influences the development of the higher functions far beyond the confines of that particular subject" (Moore, 2000:18). This is also the approach Paul and Elder (2008) advocate that every subject area at every educational level should be organised around the concept of critical thinking. Teachers should be knowledgeable about social constructivism theory and critical thinking.

The choice of Geography was guided by the fact that the authors are competent in the subject and that they also believe that it represents many other subjects that provide unique opportunities to learning and practicing critical thinking strategies. We are convinced that incorporating critical thinking elements into the teaching and learning of Geography would promote student thoughtful and insightful skills (Hove, 2011) that hopefully lead to developing meaningful solutions to the multitude of problems facing humankind (Gough, 1991).

The original lesson plan was developed by three third year students of Mzuzu University (Manoah Kamanga, Frank Mgungwe, and Ballie Mvula) with the purpose of teaching pollution and promoting critical thinking in learners. These authors have adapted the original lesson plan. The authors would like to recognise the fact that there may be variations in style and format of lesson plans. For this reason, the authors request readers to only focus on the aspects directly related to the issue of critical thinking.

(Location of Table 1)

How this lesson plan would promote critical thinking skills

The organisation of activities in the lesson plan draws lessons from Hove (2011) that promoting critical thinking requires "scaffolded instruction" (p.22). In this lesson plan, activities 1 and 2 served the purpose of allowing the students to discover the concepts on their own which they used to tackle more complex tasks in Activities 3, 4 and 5. The three Activities subscribe to the view that any critical thinking strategy "must be designed with an end-goal of students developing the ability to access, analyse, synthesize and evaluate a problem independently and with confidence in the accuracy of their thinking" (Hove, 2011: 26).

In Activity 1, there are two points at which critical thinking is practiced:

  i.   the learners are asked a high order thinking question: why it is dangerous to drink polluted water. The correct answers do not lie in the knowledge or comprehension level but in judging and appraising information, procedures and solutions (evaluation level of the cognitive domain).

  ii. the learners are required to answer a high order question of defining pollution based on what they saw in the bottles. The correct answer will have to be negotiated in group activity. The correct response will come from combining concepts to create a new idea (synthesis) and what they would have

learned, develop definitions and decide the best one (evaluation). Because the learners will have to negotiate and agree or develop one definition, many of the group members will have to accept that their views were not good enough. Through such a process egocentrism and sociocentrism would have been corrected.

In Activity 2, the learners are given graphic data showing air pollution, water pollution and ground pollution. The learners are supposed to pick out the most important points, differentiate and generalise (analysis) what they see, synthesise and evaluate. The correct answer will have to be bargained. Through group work where there is bound to be arguments and counter arguments egocentrism and sociocentrism would have been checked.

Activity 3 includes two specific activities:

    i. the learners are supposed to go to a polluted stream where they should practice critical thinking through the processes of analyzing, synthesizing and evaluating what they see. They will deal with the following questions:

- Why is the water dirty?

- Where do the pollutants come from?

- Who is responsible for creating the situation?

- What should be done to stop/minimize polluting the river?

They will have critical thinking practice through the approaches of group work, field work, problem solving, and multi media. It is expected that seeking consensus on causes of and solution to pollution will generate hot debates that should stimulate critical thinking.

    ii. Groups are supposed to present their findings to the class. The class will examine the viability of each suggestion. In this complex exercise, the learners will be able to practice

analysis, synthesis and evaluation in addition to having egocentrism and sociocentrism checked.

Activity 4 is a mini project aimed at assessing whether learning took place or not. It challenges group members to implement any one of the approved ideas as a means of building in them a sense of social responsibility. In this instance, the learners will be able to practice the skills of application, analysis, synthesis and evaluation.

Activity 5 is meant to help the learner retain what they had learned earlier. In looking at their own home, they will have a chance to analyse and evaluate the state of pollution in the home.

Conclusion

In this article, we have advanced a need for teaching critical thinking in secondary schools in Malawi. Drawing on the social constructivism theory as advanced by Piaget and Vigotsky, we have stressed the role of a teacher or an educator in creating a conducive learning environment in the classroom to promote critical thinking. We have shown how egocentric and sociocentric tendencies have the potential to hinder critical thinking in the classroom and have demonstrated how these tendencies can be corrected by teaching learners critical thinking skills through practicing high order cognitive skills of application, analysis, synthesis and evaluation. A model Geography lesson plan has been provided to show how teachers can simultaneously teach subject content and promote critical thinking in learners.

References

Adu-Febiri, F. (2002). Thinking skills in education: ideal and real academic cultures. *CDTL Brief*, 5, Singapore: National University of Singapore.

Alwali, A. K. (2011). Benefits of using critical thinking in high education. *Conference proceedings of 5th International technology, education and development conference.* March 7-9, 2011. Valencia, Spain, pp. 2527-2532.

Arends, R. I. (2004). *Learning to teach* (6th Ed.). Boston: McGraw Hill.

Bass, G. Jr., & Perkins, H. (1984). Teaching critical thinking skills with CAI. *Electronic Learning*, 14, 32, 34, 96.

Beattie, M. (2003). *Constructivist learning environment project paper*. George Mason University. Retrieved from: cehdclass.gmu.edu?---MarkBeattie/constructivism.doc

Binker, A.J.A., & Charbonneau, M. Piagetian insights and critical thinking. Open journal system. Retrieved on 14/10/13 from ojs.uwindsor.ca/ojs/leddy/index.php/informal_logic/article/---2191.

Carrol, T. M. (1989). Critical thinking: promoting it in the classroom. Retrieved on 29/09/2013 from www.eric.ed.gov/ERICWedPortal/recorddetail?accno=ED306554

Choy, S.C., & Oo, P.S. (2012). Reflective thinking and teaching practices: A precursor for incorporating critical thinking into the classroom. *International journal of instruction.*5(1),167-182.

Cottrell, S. (2005). Critical thinking skills. New York: Palgrave Macmillan

Das, S., & Kramer, A. (2013). Self-censorship on facebook. Retrieved on 22/06/13 from http://cmuchimps.org/uploads/publication/paper/122---

Fareed, A., & Waghid, Y. (2005). In defence of deliberative democracy: Challenging less democratic school governing body practices. *South African Journal of Education*, 25(1), 25-33.

Ferlazzo, L. (2011). How can we teach critical thinking skills? Retrieved 07/08/12 from

http://blogs.edweek.org/teacher/classroom_qa_with_larry_ferl azzo/2011/11/how_can_we_teach_critical_thinking_skills.ht ml.

Fisher, R. (2006). Expanding minds: Developing creative thinking in young learners. *CATS:The IATEFL young leaners SIG journal*, Spring 2006, 5-9.

Ganly. S. (2010). Critical thinking: benefits, characteristics, and decision-making.   Retrieved   on   10/05/12   from http://voices.yahoo.com/critical-thinking-benefits-characteristics

Gough, D. (1991). *Thinking about thinking*. Alexandria, VA: National Association of Elementary School Principals.

Hacker, P.M.S. (2005). *Analytic philosophy: beyond the linguistic turn and back again.* Oxford: St John's College.

Hove, G. (2011). Developing critical thinking skills in the High School English classroom. (Unpublished Masters of Science Degree in Education Dissertation). University of Wisconsin-Stout, Menominee.

Ijaiya, N.Y.S., Alabi, A.T., & Fasasi, Y.A. (2010). Teacher education in Africa and critical thinking skills: needs and strategies. *The social sciences* 5(4), 380-385.

Letseka, M.M., & Venter, E. (2012). How student teachers understand African philosophy. Koers-Bulletin for Christian scholarship; 77(1). Retrieved from http://koersjournal.org.za/index/php (Accessed 28/10/13).

Longworth, G. (n.d.). Analytic philosophy. Retrieved on 28/10/13 from http://www2.warwick.ac.uk.

Malawi Voice, July 13, 2013

Moore, A. (2000). *Teaching and learning.* London: Routledge Falmer.

Moore, B. N., & Parker, R. (2000). *Critical thinking*. (6th ed.). Boston: McGraw Hill.

Mwamwenda, T.S. (2004). *Educational psychology: An African perspective*. Sandton: Heinemann.

Open Society Initiative for Southern Africa. (2011). Roll out of the critical thinking pedagogical approach in Malawi. Retrieved on 22/10/12 from http://www.osisa.org/edcuation/malawi/roll-out-of-the-critical-thinking - pedagogical-approach-in-malawi.

Owolobi, H.O. (2003). The challenge of critical thinking for curriculum development and evaluation in Nigeria. Retrieved 17/10/13 from http//unilorin.edu.ng.journals/education/ije/june2003

Paul, R. & Elder, L. (2008). *The miniature guide to critical thinking: Concepts and tools*. California: The Foundation for Critical Thinking.

Rudinow, J. & Barry, V.E. (2008). *Invitation to critical thinking* (6th ed.). Australia: ThomsonWadsworth.

Samuel, S. S. (1999). Reflective thought, critical thinking. Retrieved 17/10/13 from http://www/ericdigest.org/2000-3/thought/htm

Sasson, D. (2007). Teaching creative thinking. Retrieved on 17/10/13 from http://suite.101.com/article/thinking-creative-thinking-a14719

Tam, M. (2000). Constructivism, Instructional Design, and Technology: Implications for Transforming Distance Learning. *Educational Technology and Society*, 3 (2).

Wadsworth, B.J. (1989). *Piaget's theory of cognitive and affective development*. (4th ed.) London: Longman.

Table 1: A Geography Lesson Plan

LESSON PLAN
TERM ONE

Subject:	Geography	**Form:** one	
Topic area:	Natural resources	**Date:** 12/04/2014	
Subtopic:	Pollution	**Number of learners:**	40
Period/time:	80 minutes		

Aim: To teach water pollution and simultaneously promote critical thinking skills

Specific objectives:

At the end of this lesson, learners should be able to:

i. define what pollution in general terms is after observing dirty water and looking at pictures showing different types of polluted water;

ii. identify causes/sources of the pollution; and

iii. suggest possible solutions to some challenges.

iv. practice critical thinking skills.

Previous knowledge

- Learners already know the meaning of environment and its components.

- Learners already know natural resources

Stage and time budget	Teacher activities	Learner activities and the approaches	Teaching and learning aids	Critical thinking promoted and negative factors checked
Introduction Gaining attention (2minute)	Ask learners what they ate yesterday and how they disposed of the left-overs	Answer questions	None	
Recall previous knowledge (3 minutes)	Ask learners to mention some of the natural resources and the meaning of environment	Answer questions	None	
Presenting learning objectives (3 minutes)	• Inform the learners the objectives of the day's lesson. • Write the objectives on the chalkboard.	Write down the objectives	None	
Presentation (50 min) **Activity 1:** Eliciting the meaning of pollution	• Display 2 bottles of water: (a) containing dirty water, (b) containing clean water. • Ask learners which water they would drink • Ask learners if they would drink water in bottle (b) if someone urinated in it. • Ask them to elaborate why it is dangerous to drink such water	Answer question Answer question Elaborate (*HOQ*)	1bottle of water containing clean and 1 bottle of water containing dirty water	Critical thinking through practice of evaluating
Eliciting the meaning of pollution	• Ask learners to define "pollution" basing on the	• Learners answer question and debate why one definition is	• Chalk board • 1 bottle of clean	Critical thinking through practice of Synthesising and

	activity. Write their definitions on the board Ask learners to choose the best definition	better than others *(GA, HOQ)*	water and 1 bottle of dirty water	evaluating *Egocentrism & sociocentrism checked*
Activity 2: Eliciting types of pollution	• Ask learners to get to their groups. Let group leaders collect diagrams/pictures showing types of pollution. • Ask groups to discuss what they see on the diagrams and answer the questions below them.	• Leaders collect the diagrams/pictures • Discuss the diagrams and answer questions e.g. explain what you see, how is it bad to human and other forms of life? *(GA, HOQ)*	• Diagrams/pictures of air pollution, water pollution, land pollution Pen and paper	Critical thinking through practice of analysing, synthesising and evaluating *Egocentrism & sociocentrism checked*
Activity 3: Short excursion to a water stream	• Ask learners to go to the stream to observe the quality of water. Give them guiding questions to answer. They should do the exercise in their groups. Ask learners to discuss the causes of water pollution and let them suggest possible solutions	• They go out to the stream and discuss and record responses to the following: Why the water is dirty, where pollutants come from, who is responsible for the pollution, what should be done to stop/minimise the behaviour *(GA, HOQ, FW, PS, MS)*	• Question sheets • Pen and paper	Critical thinking through practice of analysing, synthesising and evaluating *Egocentrism & sociocentrism checked*

Group presentations	• Ask the group recorder to present their findings • Write their findings on the board • Ask the class to debate the viability of each suggested solution and agree on workable solutions the learners can do something about.	• Group recorder reports • Class debates and choose the best option. **(GA, HOQ, PS)**	• Chalk board • Chalk board	Critical thinking through practice of analysing, synthesising and evaluating *Egocentrism & sociocentrism checked*
Conclusion Retention activity (10 minutes)	• Summarize the main point by asking questions of what they have learned. Write the correct responses on the board.	• Answer questions • Copy notes from the board	• Chalk board	
Follow up **Activity 4** Assessment (10 minutes)	• Ask each group to choose group leaders of a preferred mini project to be implemented close to school outside class time.	• Choose leaders. Strategies will be discussed outside class time**(GA, PS)**	• Learners to decide	Critical thinking through practice of applying, analysing and evaluating *Egocentrism & sociocentrism checked*
Retention **Activity 5** (2 minutes)	• Write on board take-home research assignment: Explain any 5 signs of pollution around your home.	• Copy the take-home assignment **(FW, AMB)**	• Chalk board • Pen and paper	Critical thinking through practice of analysing, evaluating
Reflection on the lesson:				