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Biology Teachers' Context Based Approach Knowledge in the Design of 'O' Level Biology Lessons in Selected Secondary Schools of Kafue District

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Abstract: ***The study investigated biology teachers context based approach (CBA) knowledge in the design of 'O' level biology lessons. The study used a qualitative approach and a case study design to investigate the issues involved. The sample comprised six biology teachers who were purposively drawn from three secondary schools of Kafue district. Semi structured open ended written interview schedule and document analysis guides wereused as data collection instruments. Data wereanalysed thematically. The findings revealed that all the teachers showed CBA knowledge in designing teaching methods that could engage learners in the lesson. However, only few teachers (2) showed CBA knowledge in giving real life examples during 'O' level biology lesson design. The majority of the teachers (4) did not show CBA knowledge in giving real life examples during biology lesson design. None of the teachers showed CBA knowledge in preparing context based problem solving tasks for the learners. The study concluded that the majority of teachers of biology in Kafue district lacked CBA knowledge of including everyday life examples and preparing context based problem solving tasks for the learners in their lesson design.In view of the findings above, the study recommended that the Ministry of Education through Zambia Association for Science Education (ZASE) should organise workshops for biology teachers on how to link biology content to learners' everyday life experiences for meaningful learning.***

Keywords: Context based approach, teacher context based approach knowledge, teacher, design

1. Introduction

In Zambia science is made up of Physics, Chemistry, Biology, Agricultural Science and Integrated Science as outlined in the Zambia National Education Curriculum Framework of 2013. Science subjects form a very important component of the secondary school curriculum (Ministry of Education, MoE, 1996). Therefore, all pupils in secondary schools are expected to take biology as one of the science subjects.

Before the end of the 20th Century, 'O' level biology was mostly taught in a traditional way (MoE, 1996). The focus was on covering the whole syllabus which often involved recitation of facts and evaluating students using standard tests that asked them to regurgitate facts (Howes, 2000). Students did not see the relevance of the content of the syllabus to their everyday lives when content was presented in that way (De Vos&Reiding, 1999; Hobden, 1998).

In view of the above problem, researchers and science educators recommended the use of context based approach (**CBA**) as a way to help learners benefit from biology lessons (Gilbert, 2006; Gilbert, Bulte & Pilot, 2011).CBA is described as a learner centred teaching method in which the learners' diverse learning experiences are used in teaching and learning process (Glynn &Koballa, 2005). In CBA actual life examples and learner engagement are used to introduce biology concepts (Bennett, Lubben& Hogarth, 2007; p. 348).

As a result, many countries in the world have adopted this approach (CBA) as a way of teaching science in secondary schools in order to help the learners realise the link between the lessons and their everyday life experiences. The first context based project started a long time ago in the Netherlands with the large scale secondary physics education program called 'learn physics package Development' (Stolk et al., 2009). Later, the American Chemistry in the Community (ChemCom) and Chemistry in Context (CiC) programs were developed.In Africa several small scale context based projects were implemented in secondary science education. Examples were the Lessons project and the Linking School Science to Industry and Technology (LISSIT) project in Swaziland, and the Basic Education into Rural Development (BEIRD) project in Uganda (Kazeni, 2012). The programs were short term and focused in general on context in science education

Zambia has not been an exception regarding the use of CBA. Six years ago, the biology syllabus was reviewed in line with the Outcome Based Education principles which seek to link education to real life experiences that give learners skills to access, criticize analyse and practically apply knowledge that can help them gain life skills (CDC, 2013). Unfortunately, despite the review of the biology syllabus, performance of candidates in all(3) biology examination papers in Zambia has remained lower than expected (ECZ, 2015; 2016). For example, figure 1 shows countrywide biology school certificate results for the year 2015.

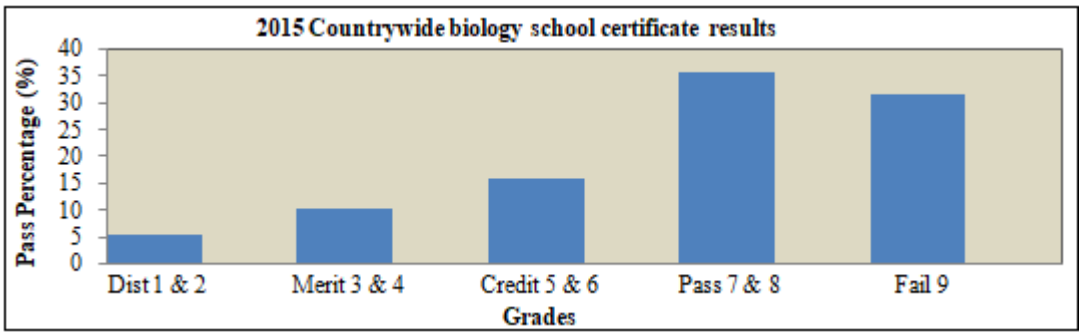


Figure 1: Countrywide school certificate biology results for 2015

The figure shows that in 2015, 35.9% of the candidates barely passed and 31.7% failed biology. Furthermore, according to the examining body, between 2015 and 2016 the mean performance for Biology in Zambia only increased from 21.59% in 2015 to 24.14% in 2016 (ECZ, 2016). This is incredible because studies in other countries, that use CBA have revealed positive results in science subjects in terms of improving students'motivation, developing a sense of curiosity about nature, developing students'positive attitudes towards science and providing easier learning (De Jong, 2008; Wieringa et al., 2011; Ozcan & Gercek, 2015). There could be a problem regarding how CBA is implemented in the teaching of ordinary level biology in Zambia (Kambi, 2018). Hence, this study investigated biology teachers CBA knowledge in the design of 'O' level biology lessons in the Zambian context.

1.1 Statement of the problem

When biology is taught in a traditional way, learners do not see the relevance of the content of the syllabus to their everyday lives (MoE 1996, De Vos&Reiding, 1999; Hobden, 1998). Hence, teachers are encouraged to utilise CBA in teaching biology so that learners can benefit from their biology lessons fully. This is because research indicates that CBA promotes better performance of learners in biology (Hake, 2000; Gilbert, 2006). In Zambia despite the review of the biology syllabus (5090) in line with CBA, performance in biology of learners has remained unsatisfactory (CDC, 2013; ECZ, 2015). However, nothing is known about biology teachers CBA knowledge in the design of 'O' level biology lessons in the Zambian context. This creates a knowledge gap.

1.2 Objective of the study

To determine teachers context based approach Knowledge in the design of 'O' level biology lessons.

1.3 Research question

What knowledge of context based approach do teachers of biology have in lesson design?

1.4 Significance of the study

It was hoped that the findings of the study might help teachers of biology to link their lessons to learner's daily life experiences for meaningful learning. Biology teachers might also benefit from the study by establishing whether their biology lessons are adequate to enhance learners' conceptual understanding of biology concepts.

1.5 Scope of the study/ Delimitations of the study

The study was limited to Kafue district of Lusaka province. It was conducted in selected secondary schools in the district and it investigated the implementation of CBA in the teaching of 'O' level biology.

1.6 Limitation of the study

Since the study employed a case study design, findings would not be generalized to all secondary schools in the Republic of Zambia.

2. Methodology

2.1 Research Approach

The study used a qualitative approach in order to have an in-depth understanding of teachers CBA knowledge in the design of 'O' level biology lessons.

2.2 Research design

A case study design was employed in conducting this study. Since the study focused on a single unit of biology teachers teaching biology 5090 syllabus, a single case study was appropriate.

2.3 Study population

This study targeted biology Teachers teaching biology (5090) syllabus in three selected secondary schools of Kafue district in Lusaka province.

2.4 Sample size

The study sample comprised 6 biology teachersdrawn from three secondary schools of Kafue district that offered biology.

2.5 Sampling procedure

In this study purposive sampling was used to select the 6 biology teachers. Specifically, homogenous sampling was used; this is because the researcher intended to select participants that shared the same characteristics or experience in the teaching of 'O' level biology.

2.6 Research Instruments

The study used document analysis guides for data collection. Document analysis of schemes of work and lesson plans was done within the period of two weeks after making prior arrangements with the relevant authorities and seeking the consent of all the participants. The document analysis focused on biology teachers CBA knowledge in the design of 'O' level biology lessons. CBA knowledge constituted three things; giving everyday real life examples, learners' engagement actively in the lesson and preparing context based problem solving tasks for the learners. Document analysis was complimented by semi structured open ended written interviews for the participants.

2.7 Ethical issues

Taking into consideration ethical issues, the schools were identified by colours (purple, yellow and green) while participants were identified by letters (A, B, C, D, E and F).

2.8 Data Analysis

In this study the collected data was analysed thematically.Firstly, the collected data was organized. This was done by transcribing information from document analysis guides. After which data was sorted and put into different categories depending on its sources that is the instrument. Secondly, the data was read through for general sense of the information and to reflect on its overall meaning (Creswell, 2008). Lastly, data was read several times and then organized into categories based on its meaning after which major themes were generated.

3. Findings

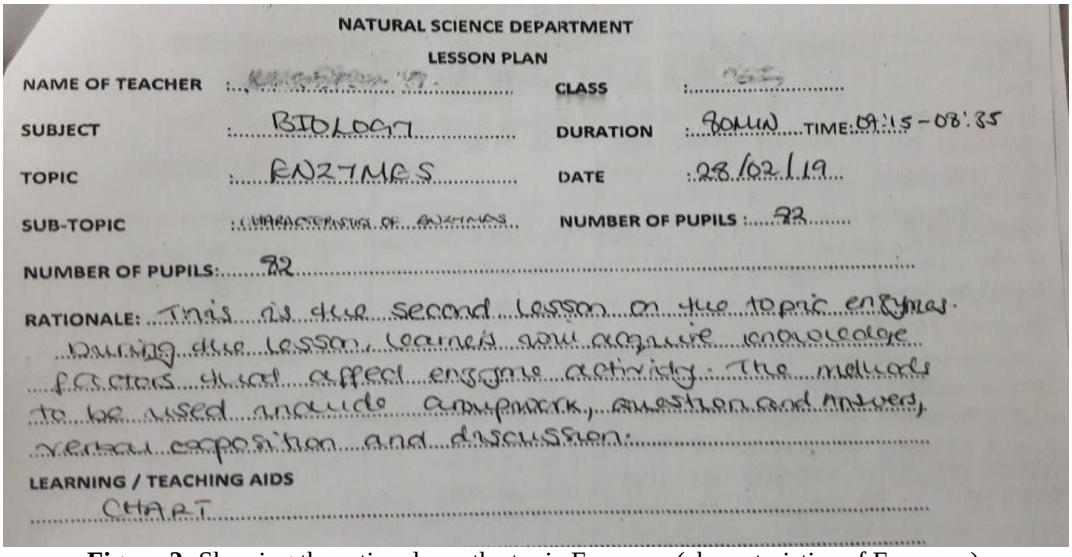
Question: What knowledge of CBA do teachers of biology have in lesson design?

3.1 Biology teacher's context based approach knowledge in 'O' level biology lesson design

Teachers CBA knowledge was determined based on the following: giving real life examples, teaching methods planned with opportunities for collaborative learning, and preparing context based problem solving tasks for learners.

3.1.2 Use of real life examples

In order to establish if teachers included real life examples from learners nearest environment at the stage of lesson design, the study used document analysis of lesson plans. The study revealed that very few participants (2) included real life objects as examples in their lesson plans. The majority of participants (4) did not include any real life example during lesson planning. This indicated that generally, teachers of biology did not show CBA knowledge of the use of real life examples from the learners nearest environment. The following figures are examples of the lesson plans from different schools which were analysed. The names of schools were hidden.


NATURAL SCIENCE DEPARTMENT

LESSON PLAN

NAME OF TEACHER : ..... CLASS : .....

SUBJECT : BIOLOGY DURATION : 80MIN TIME: 09:15 - 08:35

TOPIC : ENZYMES DATE : 28/02/19

SUB-TOPIC : CHARACTERISTICS OF ENZYMES NUMBER OF PUPILS : 92

NUMBER OF PUPILS: 92

RATIONALE: This is the second lesson on the topic enzymes. During the lesson, learners will acquire knowledge factors that affect enzyme activity. The methods to be used include assignment, question and answer, verbal exposition and discussion.

LEARNING / TEACHING AIDS

CHART

Figure 2: Showing the rationale on the topic Enzymes (characteristics of Enzymes)

It can be seen from figure 2 that the statement on the rationale does not represent a real life example that could help learners to connect the lesson to their everyday life experiences. Context based approach involves giving examples from the learners nearest environment. The statement from the rationale that learners will acquire knowledge on factors that affect enzymes is not context based.Next is figure 3.

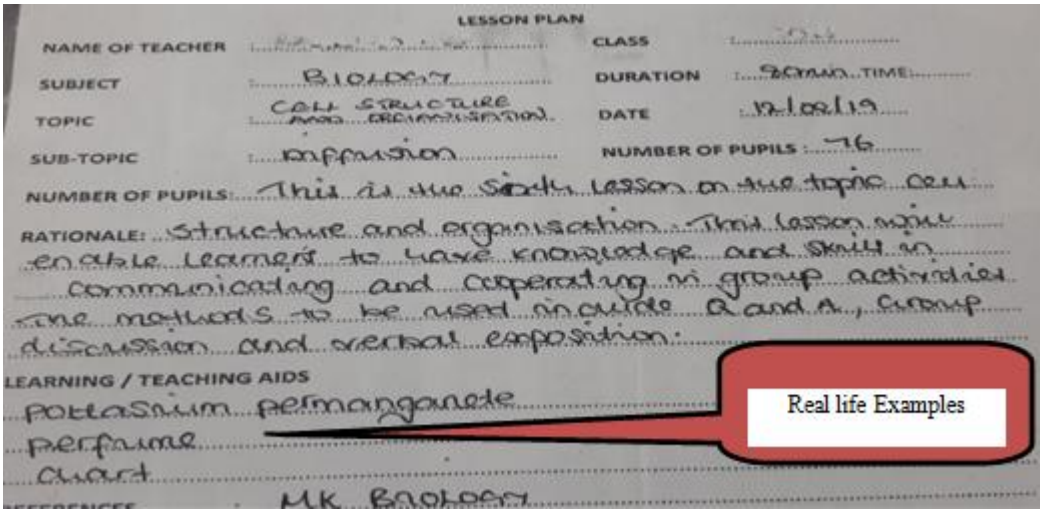


Figure 3: Showing the rationale for the topic on cell structure and Organization (diffusion)

The participant identified perfume as a teaching aid for the lesson on diffusion which is a real life example. However, the rationale of the lesson does not includea real life example. The participant should have used perfume as an example that could help the learners to link the lesson on diffusion to their everyday life experiences. Next is figure 4.

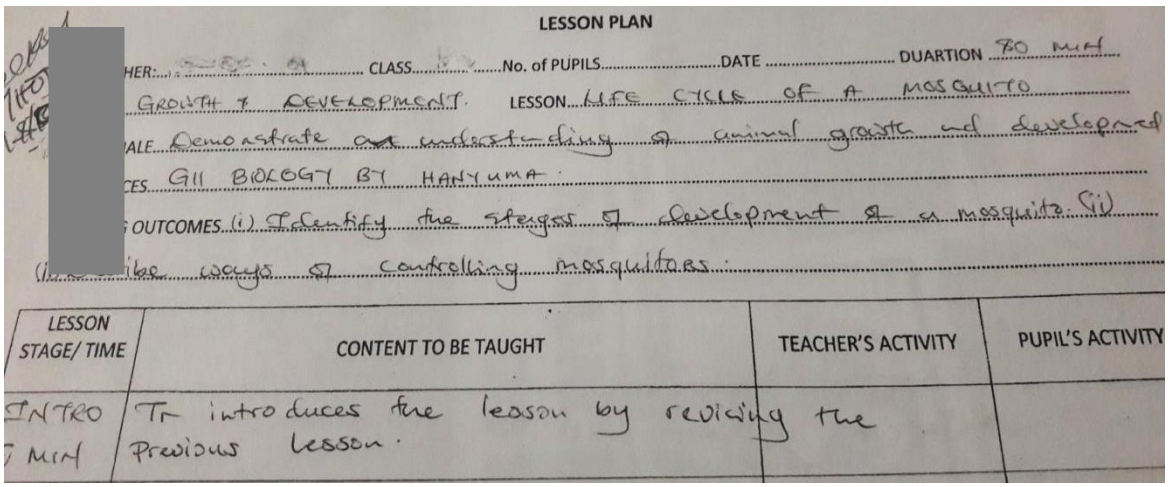


Figure 4: Showing the rationale on the topic growth and development

It can be seen from figure 4that there is no difference between the rationale and the topic; Growth and development. The rationale should have given the purpose of learning the lesson on life cycle of a Mosquito. Therefore, the rationale, demonstrating an understanding of animal growth and development, is not a real life example which can help learners to link the lesson to their everyday life experiences. Next is figure 5.

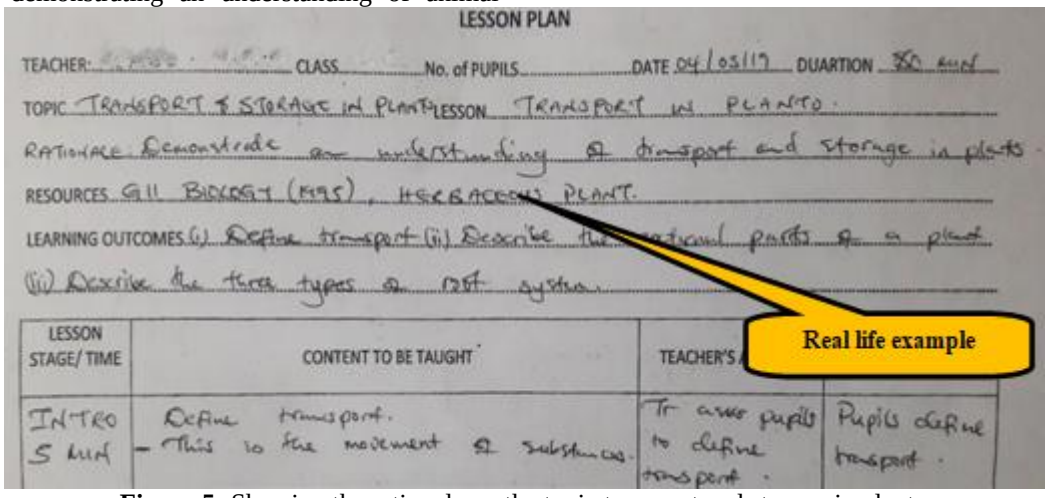
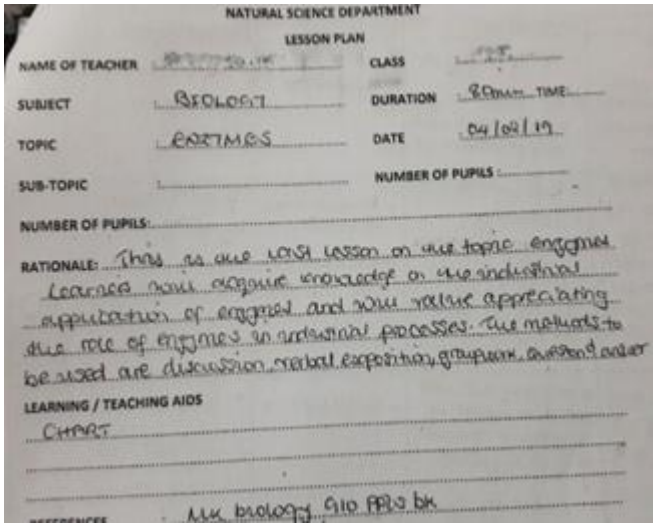


Figure 5: Showing the rationale on the topic transport and storage in plants

It can be seen from figure 5that both the rationale and lesson introduction could not help learners connect the lesson to their everyday life experiences. Asking the pupils to define transport during lesson introduction can not help the learners link the lesson to their everyday life experiences. However, the participant used a real life object (Herbacious plant) as a teaching Aid for the lesson representing some CBA knowledge (33%) in lesson design. Next is figure 6.


NATURAL SCIENCE DEPARTMENT

LESSON PLAN

NAME OF TEACHER ..... CLASS .....

SUBJECT BIOLOGY DURATION 80min TIME .....

TOPIC ENZYMES DATE 04/02/19

SUB-TOPIC ..... NUMBER OF PUPILS .....

NUMBER OF PUPILS: .....

RATIONALE: This is our last lesson on the topic enzymes Learners have acquire knowledge on the industrial application of enzymes and now value appreciating the role of enzymes in industrial processes. The methods to be used are discussion, verbal exposition, group work, question and answer

LEARNING / TEACHING AIDS

CHART

REFERENCES MK biology G10 PB's bk

Figure 6: Showing the lesson on the topic industrial application of enzymes

It can be seen from figure 6 that the rationale was supposed to be a sub-topic. A lot of industries use enzymes in theirindustrial process. The participant could have used the products from these industries to help learners link the lesson on industrial application of enzymes to their everyday life experiences. Therefore, the rationale on figure 6 is not a real life example.

3.1.3 Teaching methods planned with opportunities for collaborative learning

The study used document analysis of schemes of work and lesson plans to determine biology teachers' context based approach knowledge in designing teaching methods which could engage learners in real life experiences through collaboration.The study showed that all the participants had CBA knowledge in designing teaching methods that could engage learners actively in the lesson and help them connect the lessons to their real life experiences. This could be due to the fact that the participants were using a common district scheme of work for biology 5090 syllabus as shown in the following figures representing schemes of work from various schools in the district:

BIOLOGY SCHEMES OF WORK FOR 5090.GRADE 10 TO 12

TOPIC/SUBTOPIC	SPECIFIC OUTCOME	DURATION/ GRADE 10	TEACHING METHODS.
(1)-LIVING ORGANISMS AND LIFE PROCESSES. (a)Characteristics Of Living Organisms.	-identify the characteristics of living organism. -Distinguish between living organism and non living organisms. -Describe life processes of living organisms	1 WEEK Week 1 Term 1.	QUESTION AND ANSWER,DISCUSSION, LECTURE, BRIEF NOTES. FIELD TRIP.
(b)Cell Structure and Organization. (b1)Microscopes	-Demonstrate the correct use of a microscope. -Prepare specimen using a microscope. -Calculate magnification of specimen.	1 WEEK Week 2 Term 1.	PRACTICAL SESSION. CHARTS. GROUP WORK. READY MADE DIAGRAMS. No drawing during lessons.
(c)Cell Structure and Functions. (d)Cell Organization. `Tissues ,,Organs	-Investigate the structure of cells and functions of the organelle. -Distinguish between plant and animal cell structure. -Relate cell structure and functions. -Describe cell organization In multicellular organisms.	1 WEEK Week 3/4 Term 1.	PRACTICAL SESSION. CHARTS. GROUP ACTIVITIES. DISCUSSION. DIAGRAMS. No diagrams drawn in class. BRIEF NOTES.

Figure 7: Common schemes of work for biology 5090. Grade 10

It can be seen from figure7 that the common schemes of work was designed from grade 10 to 12 and the teaching methods planned could engage learners in the lesson. For example field trip for the topic living organisms and life process can help learners realize the link between the lesson and their daily life experiences.

TOPIC/SUBTOIC	SPECIFIC OUTCOMES.	DURATION/ GRADE 11	TCH MTHD /REF
(11)TRANSPORT IN MAN. (a)Blood. (b)Blood Groups. (c)Blood Disorder	-Identify the composition of blood. -Explain the functions of blood. -Distinguish between the red and the white blood cells -identify the sites where the blood cells are produced. Explain the process of blood clotting. Describe the ABO blood groups. -Explain the importance of determining the blood groups and Rhesus factors. -Explain the donor recipient compatibility of blood groups. -Explain the importance of screening the blood for purposes of transfusion. -Investigate common blood disorders.	3 WEEKS. Week 9/10/11 Term 1	QUESTION AND ANSWER. BRIEF NOTES, DISCUSSION, CHARTS, DIAGRAMS.
	WEEK 12/13 FOR MONTHLY TESTS/END OF TERM TESTS	END OF GRADE 11 TERM 1.	

Figure 8: Common schemes of work for biology 5090. Grade 11

It is clear from figure8thatdiscussion method was planned for the topic transport in man. The method could engage learners in the learning process, although it was notenough for the whole topic.

PIC/SUBTOPIC	SPECIFIC OUTCOMES	DURATION/GRADE 12	TCH MTHD/REF
7)REPRODUCTIO N ANIMALS. Sexual production in imals. Birth Control	-Describe the process of reproduction in a frog. -Identify male and female reproductive organs in human beings. -Explain the functions of the different parts of the human reproductive system. -Describe the biological changes associated with sexual development in human beings. Describe the menstrual cycle in human beings. -Explain the processes of fertilization and implantation in human beings. Identify causes of infertility in human beings. -Describe the development of the embryo in the uterus. -Describe health risks associated with foetal development in human beings. Describe healthy pregnancy and safe child birth. -Explain some methods of birth control. -Describe the benefits and possible risks of	-`3 WEEKS. Week 8/9/10 Term 1	CHARTS. DIAGRAMS BRIEF NOTES QUESTION AND ANSWER. GROUP ACTIVITY. DISCUSSION. Caution: Teachers must not be carried away by pupil's deep interest in the topic. Refer to the scheme. WEEK 11 USED FOR REVISIONS. WEEK 12/13 USED FOR END OF TERM 1 TESTS.

Figure 9: Common schemes of work for biology 5090. Grade 12

It can be seen from figure 9that group activity and discussion could engage learners in the lesson. However, teachers were cautioned to stick to the schemes of work and not to be carried away by learners' interest.

Henceforth, it is clear from figures 7 to 10that experimentation, discussion and group activitywerethe common teaching methods in the schemes of work that were meant to engage learners in the lesson actively. However, such methods appeared in the common schemes of work, the current study revealed teacher exposition, question and answer as the dominating teaching methods used by teachers in class.

Document analysis of lesson plans also revealed that discussion, group work, teacher exposition, question and answer were the most frequent teaching methods. Results are shown in table 1.

Table 1: Teaching methods

S/N	Teaching methods	Frequency
		Lesson plans (18)
1	Teacher exposition	16
2	Question and Answer	13
3	Discussion	10
4	Experimentation	6
5	Demonstration	2
6	Group work	11
7	Field trip	0

Teacher F, for example; planned for group work, discussion, verbal exposition and question and answer as the teaching methods for the lesson on industrial application of enzymes as shown in figure 10;

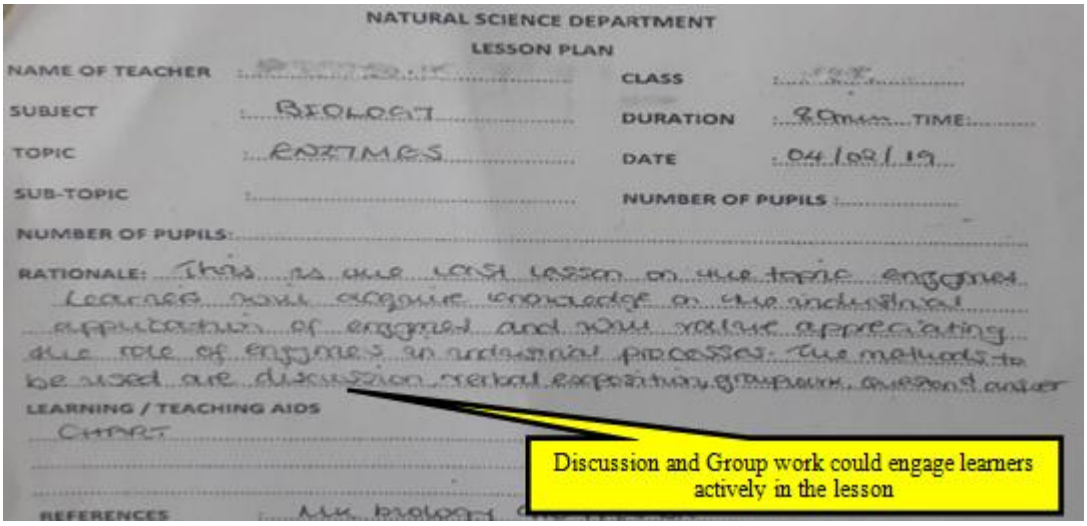


Figure 10: Teacher F, lesson plan

3.1.4 Preparation of Context based problem solving tasks

To determine teachers CBA knowledge in the preparation of context based problem solving tasks the study used document analysis of lesson plans and it was complimented by semi structured open ended written interviews. A total of 18 lesson plans were analysed and the study showed that no participant planned for context based problem solving tasks for the learners. However, participants were asked during semi structured open ended written interviews to explain how they could create a context based problem solving task that relates to learners real life experiences. Out of 6, only 3 participants said the following;

Teacher A:

…… *"by giving learners a research based assignment for example discuss the transmission, treatment and impact of HIV/AIDs"*?

Teacher C:

……. *"by providing practical work in which they investigate a cause for certain situation for example plant provided with culture solution and another plant without nitrogen. Observe and conclude what has led to situation under observation".*

Teacher F:

……. *"by asking learners to take a field trip and identify living and non-living organisms. Ask the pupils to identify the similarities and differences between living and non-living organism".*

Certainly from the responses, it can be seen that even the participants who managed to respond to the question did not explain clearly how a context based problem solving task can be created that could help learners relate to their real life experiences.

4. Discussion of Findings

Research question 1: What knowledge of CBA do teachers of biology have in lesson design?

4.1 biology teachers context based approach knowledge in 'O' level biology lesson design

4.1.1 Use of real life examples

The study revealed that out of 6 participants, only few participants (2)planned for real life objects (real life example) as teaching aids during 'O' level biology lesson design (4.1.2). The majority of the participants (4) did not use any real life example during 'O' level biology lesson design. The findings are similar to those in the study conducted by Ozcan and Gercek (2015) thatbiology teacher candidates lacked some knowledge about CBA, which could be improved by using the CBA activities in courses at university level. However, the study by Ozcan and Gercek (2015) investigated only candidate teachers CBA knowledge. The current study targeted in-service biology teachers CBA knowledge in 'O' level biology lesson design. Therefore, it is important to design biology lessons by giving real life examples in order to make the subject relevant to the learners and this was supported by Sozbilir et al., (2007) who said that the basic goal of context based approach is to introduce scientific concepts through examples from daily life. Learners can easily learn those scientific concepts which are related with daily life.

The study further revealed that document analysis of lesson plans did not bring out any statement related to learners' everyday life experiences. For example, the rationale on figure 4, to demonstrate an understanding of animal growth and development was not a real life example; instead it was a repetition of the topic; Growth and development. Another example is on figure 3 on the topic Enzymes; the participant left the provision for sub-topic blank and wrote the sub-topic on the rationale which was not supposed to be the case. There are several industries which use enzymes in various ways.The teacher could have taken advantage of the products of these industries and help the learners to realize the link between the lesson and their everyday life experiences. For example baking powder and yeast contain enzymes; when baking powder and yeast are added to dough, they cause the dough to increase in volume. Therefore, baking powder and yeast as examples of enzymes have a lot of contexts such as: baking bread, pancakes, cakes, scones and so on which the teacher could have referred to. It is important for the teachers of biology to contextualize the lessons by giving learners' everyday life examples and this is in harmony with CORD (1999) who pointed out that contextual learning focuses on multiple aspects of any learning environment and it encourages teachers to design lessons that include many different forms

of experience in working toward the desired learning outcomes. Therefore, in such an environment, students discover meaningful relationships between abstract ideas and practical applications of contentin the context of the real life situations.

4.1.2. Teaching methods planned with opportunities for collaborative learning

The study revealed that all the teachers had CBA knowledge in designing teaching methods that could engage learners actively in the lesson and help them connect the lessons to their real life experiences. One of the reasons could be that all the biology teachers were using the district common schemes of work for biology 5090 which contained collaborative learning methods. If it was not so, probably the findings could have been different. Nevertheless, the findings from document analysis of schemes of work and lesson plans were consistent, for more information refer to sub-section (3.1.3). The findings are in harmony with Social constructivist theory of Vygotsky (1978) who emphasized that context based learning is a pedagogical methodology that centre's on both the social context of the learning environment and the real, concrete context.The approach is based on the firm conviction that learning is a social activity and contextin whichlearning is basedon a dual axis: on the one hand, the context is the social situation of learning whereby knowledge is acquired, processed, and produced through collaboration and use rather than direct dissemination; on the other hand, the context must be an engagement with a real life task whereby knowledge interfaces with an actual, empirical reality. Both axes initiate a move away from passive learning in the traditional classroom situation.

Additionally, Vygotsky (1978) asserted that classrooms that practice constructivist activities empower the learners to gain access to their experiences and beliefs that reshape their prior knowledge in the light of the applied course content. This is supported by Taconis and Jochems (2013) that learning is understood as a process in which learners construct their own meanings from their experiences, rather than acquiring knowledge by 'copying' it from other sources. In a similar view, Ozcan and Gercek (2015) stated that the CBA towards learning refers to doing by learning rather than delivering theoretical knowledge. It aims at connecting theoretical knowledge with daily life through concrete examples from the nearest environment or through learners' analysis of the examples related to the concepts at hand. From document analysis of schemes of work and lesson plans (Table 1) it is clear that the majority of participants schemed at least one teaching method which can engage learners actively in the lesson and help realize the link between lesson and their everyday life experiences.

4.1.3 Preparation of Context based problem solving tasks

The results of the study established that no participant planned for a context based problem solving task for the learners. This implies that teachers lacked CBA knowledge in the design of context based problem solving activities for the learners. The finding is not consistent with that of Uzunboylu (2012) who examined the process of creating context based problems by teacher candidates. The study revealed that teacher candidates could develop context based problems even though they were accustomed to traditional problems.On the other hand, the current study targeted in-service biology teachers and the study established that no participant prepared a context based problem solving activity for the learners. Furthermore, in the researchers view, the reason why the study by Uzunboylu(2012) revealed that teacher candidates could develop context based problem solving task wasbecause they had guidelines to follow. However, regardless of using the guidelines the candidate teachers were still accustomed to traditional way of teaching. In future an experimental study could be done on the preparation of context based problem solving tasks by providing guidelines to one group of biology teachers and the other group without guidelines, so that the findings of the study can clarify if biology teachers need guidelines or not in the preparation of context based problem solving tasks for the learners.

In addition, the study further revealed that even the 3 participants out of 6 who responded to the question on how a context based problem solving task can be created during semi structured open ended written interviews, they did not explain clearly how a context based problem solving task can be created in line with learners daily life experiences, instead the tasks they proposed to be context based looked like any other task from biology text books (3.1.4). For example teacher A cited that learners should be given research based assignment for example discuss the transmission, treatment and impact of HIV/AIDs. Teacher F cited that learners should be taken to a field trip and ask them to identify living and non-living organisms. Therefore, the proposed tasks from the participantsare not context based problem solving tasks and are contrary to the study by Uzunboylu (2012) who asserted that a context based problem solving task should contain a scenario, event or story that the major character is the learner and the problem should make learners feel the principles related to real life. Furthermore, the finding of the current study is also contrary to that of Scott et al., (2007) who emphasized that learners understanding of scientific concepts is stimulated by the use of questions and problems from realworld contexts as starting points for developing a 'need' to learn about science.

5. Conclusion and Recommendations

5.1 Conclusion

The study concluded that majorityof biology teachers in Kafue district lacked CBA knowledge in giving real life examples and preparing context based problem solving tasks during lesson design. On the other hand, the study revealed that all the teachers showed CBA knowledge in preparing teaching methods which could engage learners actively in the lesson. The common teaching methods that could engage learners in the lesson that were revealed by the study comprised: Group work, discussion and experiment.

5.2 Recommendations

- The ministry of education through the directorate of curriculum and standards should include the innovation in the biology curriculum that can help teachers to link their

lessons to learners' everyday life experiences by using real life examples from the learners nearest environment in Kafue district.

- The ministry of education through ZASE should organize workshops for biology teachers on how to link biology content to learners' everyday life experiences in Kafue district.

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