

# **IMPLEMENTATION OF LANGUAGE SUPPORTIVE PEDAGOGY (LSP) IN THE PRE-SERVICE TEACHER EDUCATION: EXPERIENCES FROM THE MICRO-TEACHING SESSIONS DURING BIOLOGY TEACHING METHODS SECOND SEMESTER 2018/2019**

## **1.0 Introduction**

This is cycle two of the LSP implementation to undergraduate pre service teacher education programme at COED. During the first cycle the team focused much on enhancing lecturers and tutors in implementing the LSP approach. While cycle two is focusing more in enabling student teachers to implement LSP approach in the classroom through microteaching and teaching practices.

This report specifically presents experiences emerged from the micro-teaching sessions conducted from 19<sup>th</sup> March to 25<sup>th</sup> May. These experiences based on enabling student teachers to be competent in Biology content, pedagogy and the language of Biology. This was done through Biology Teaching Methods Course (SC 224).

## **2.0 Introducing LSP to Student Teachers**

LSP concepts were introduced in the second session which was conducted on 28<sup>th</sup> March 2018. The aim was to raise student teachers awareness on language issues and how it can be integrated in the teaching and learning process so as to maximize students' learning. All Biology group members were present in the lecture room. The concepts of LSP were introduced by the instructors. Student teachers were given an opportunity to give comments, suggestions and ask questions if any about LSP.

Student teachers had many misconceptions about LSP when it was introduced for the first time. The following are the misconceptions they had about LSP;

- i. Student teachers were worried of adapting LSP in teaching because they thought that LSP is about language shift i.e. shifting from English to Swahili as medium of instruction.
- ii. They also thought that LSP is about translation of scientific terms into Kiswahili language which are more difficult to be understood than the scientific English terms themselves.e.g. Photosynthesis-
- iii. For them LSP was about code switching and code mixing. This means that a teacher who is using LSP, is suppose to use one word or phrase in English and the second word or phrase in Kiswahili.

Therefore, the language expert managed to handle the misconceptions and cleared all doubts. She told them that the objective of LSP is to ensure that students are learning with understanding. The main task of the teacher in class is to help students understand the language of that particular subject (Language of Biology) by using simple sentences, vocabulary, helping them to pronounce and writing words correctly as well as using the students' first language be it Kiswahili or any language they know strategically. This means that using language one to learn language two.

### 3.0 Methodology Used

SC 224 has six modules (see the attached course outline in Appendix A) which had four hours per week. The lessons for the first two hours were delivered using the conventional ways of lecturing while the remaining two hours were used for microteaching sessions where the LSP strategies were emphasized. A total of 267 student teachers were registered for the course. However, one student postponed the studies. This implies that 266 were involved in the LSP implementation. The class was divided into two groups with the average of 133 students in each group as it is indicated in the timetable below.

#### TIME TABLE

Day	Duration/time	Venue	Group	No of students
MONDAY	8.00 – 10.00	LR 1	GROUP 1	133
WEDNESDAY	8.00 – 10.00	LR 8		
TUESDAY	8.00 – 10.00	SR 2	GROUP 2	133
WEDNESDAY	2.00 – 04.00	LR 4		

The instructors were 6, starting with Prosper Gabrieli, Flora Mbembe, Salum abdallah, Rehema Ulimboka and Pambila Mwema. The team consisted of Biology teaching methods, Biology content and English language specialists/experts. The roles of the experts were teaching the first two hours of the week, meet and discuss with the student teachers who were to present the micro lessons and give appraisals during the micro lessons. They also interviewed the students implement the microteaching after the lessons.

The plan was that each student teacher has to present a micro lesson. For this reason, a total of 266 micro lessons were implemented using the LSP approach. However, the total of 6 lessons was sampled to be the exemplary LSP. The students who were to present the exemplary LSP lessons were asked to volunteer with the promised of being given opportunity to plan the lesson with the instructors and discuss the lessons after the implementation. Thus a total of six students volunteered. Volunteered student with assistance of the course instructor planned the lesson before the class using the concept of the lesson study pedagogy and its implication in the class. It was agreed the use of simple language in the class which will be well understood by students in the class and where necessary the use of Kiswahili and/or first languages strategically to facilitate the achievement of the intended objectives.

The Six volunteered students were to choose topics of their interest and prepared LSP lessons. Student teachers met with the instructors and discussed the lesson plan to be implemented in the next lesson to check if LSP elements had been integrated. They improved the lesson plan based on the discussion with the instructors. While the six student teachers implemented the lesson in the classroom, the rest of the class acted as secondary school students. Each student was given 20 minutes for teaching and they used a total of 60 minutes. Then 40 minutes were used for discussion for the whole class to discuss the methodology, content as well as the LSP elements.

At the first three weeks, it was the instructors who mediated the discussion by modelling on how to give comments to the LSP implemented lessons. However as the time went on, student teachers were given more opportunity to lead the sessions by commenting on the lessons given by their colleagues. When it reached the fifth week, all 40 minutes for discussion were used by the student teachers to comment on the lessons including the subject content, pedagogy as well as LSP elements. Then, ten minutes were used by the course instructor to comment on methodology and content while the last ten minutes were used by the language expert to comment on how LSP had been implemented by the student teachers. She gave them the strengths and weaknesses on the usage of LSP and how they could improve their LSP lessons in the next lessons. The summary of the implemented six exemplary LSP micro lessons are presented the following sessions.

#### **4.1 THE CASE MICRO-LESSON ONE**

This was the first case session in the implementation of LSP to undergraduate students where three case lessons were prepared by three student teachers and implemented on the 28<sup>th</sup> March 2018. The lessons were on regulation, Reflex action and the Excretion. These lessons were the student teachers' choices.

##### **4.1.1 Pre-lesson Discussion**

LSP team of instructors and the student teachers meet and plan the lessons. Since this was the first group to demonstrate the use of LSP in the classroom, we spent a total of 2 hrs discussing with the student teachers about their plans. We agreed that on the appropriate components of the LSP to use be used such as the use of simple English, translations and interpretation of some key lesson terms. Also we agreed that the use of varieties of activities is to be used during the lessons. The student teachers had also an opportunity to rehearse their lessons before the instructors before the actual implementation in the classroom.

##### **4.1.2 Lessons Implementation**

The student teachers presented their micro lessons. Each of them used 20 minutes. The first presentation was about regulation in human. In that lesson, a presenter introduced the lesson by review of the previous lesson and then uses a chart to introduce the concepts of regulation. The presenter used some texts where students asked to read some meaning of the terms such as regulation, important of regulation to human survival and sometimes students were asked to compare the sentences given from different books. The lesson ended by the student teacher giving students assignment.

Thereafter, a second student teacher presented a lesson about a reflex action in the coordination topic. He introduced the lesson by defining the term reflex action using words such as touching, sharp objects, voluntary, sudden, and fast activities. He said that the connection of brain is central in defining reflex action. The student teacher then switched to Kiswahili giving two scenarios, one was "*sufuria la ndizi nyama na maji ya moto*" asking students what will happen if they dip their fingers in the *sufurias*. Then the teacher drew a reflex action arc on the board and explained the information path from the sensory receptor to

the motor neurone then back to muscles. Then he concluded the lesson by giving students an assignment.

Similarly, the third student teacher presented a micro lesson on excretion concepts where focus was on the meaning of excretion, examples of excretory organs, products and then concluded by the important of excretion to living organisms.

#### **4.1.3 Comments and Observations made by Student Teachers**

Eleven student teachers had an opportunity to comment on the given lesson. 11 said the use of Kiswahili especially at the introduction, group discussions and even when a teacher is giving some instructions/directives to follow during the lesson assisted them to follow and understand the lesson. 10 said that it the three given lessons made them to learn Biology content and the methods of teaching also. 10 said the lesson were very engaging and meaningful for them. Some of the students voices included, “I fear teaching because am not fluent in the English language, but with this approach if will continue like this hope to like teaching as I will be competent in English”, “Keeping pronouncing some terms, reading aloud and the feedback from English specialist will make me competent in teaching Biology using English language much more comfortable than before” the use of Kiswahili in some of the learning activities will open up an opportunity to cheap in some Biological species found in our environment (such as banana species like ndizi kisukari, mshare, mririwo, kitarasa nk) which are limited in the English and Latin vocabularies.

#### **4.1.4 Comments and Observations made by Instructors**

Instructor AA commended teaching by reviewing the previous lesson. The instructor explained the important of this learning experience by saying that it is an opportunity to explore students’ prior knowledge. Again, the instructor added that it is in this occasion that students can use trans-languaging (use linguistic resources and relate to the lesson). Instructor BB said that the interaction of the lesson by directing students to read was really fantastic. The instructor said, “I was so happy when the student teacher told the students to open the book on p.40 to read aloud the definition of the term regulation. I was also very happy when the teacher re-read the paragraph indicating some voices that need to stress during pronunciations” Instructor CC join instructor BB by advising student teachers to ensure that they cultivate the culture of reading (either aloud or silent or group reading) during the lesson. This is the activity that promotes reading fluency as the students are developing the English language and Biology language simultaneously. In addition, instructor CC advised the use of writing activities in the coming microteaching lessons. Importantly, instructor AA, and BB observed pronunciation errors for many student teachers such as *zat* (that), *zis* (this), *wiz* in *ze* loop of Henle (within the loop of Henle) and to *ze* (to the). Other words seemed to be wrongly pronounced included *sings* (things), are we *togeza* (are we together?), *sweet* formation (sweat formation) and I *sink* (I think). The language specialist assisted the student teachers to pronounce some of these terms by biting a tongue when pronouncing such words. They all agreed to work hard to develop appropriate pronunciations of the terms as they teach lessons in-order to be understood well with students in the field of work.

#### **4.1.5 Findings from Student Teachers' Interviews**

About eleven out of 19 student teachers who participated in the focus group discussion said that the way they are fully engaged in learning Biology content, methods of teaching Biology, Biology language and English language during the microteaching sessions. When asked to mention specific issues the like most in the lesson that engage them actively, they mentioned, "Involvement of more than one instructor in the session (19 out of 19 student teachers, pre-preparation stage where student teachers meet with course instructors before giving lessons 19 out of 19), presence of English language specialist 15 out of 19), Reading activities, pronunciations activities, and the opportunities for the student teachers to comment on the strength and areas that need improvement after the lesson (19 out of 19). However, 3 out of 19 student teachers said they didn't like the idea of making corrections on their pronunciations during the microteaching sessions though they agreed to be very beneficial to all student teachers and the students in the field (schools).

#### **4.1.6 Post-lesson Discussion**

All the three student teachers who implemented the lesson that the way the sessions are organised (pre-preparation, teaching and post lesson discussion) made them to fully participate in the preparation and implementing of the lesson. They said that encouraging students to read aloud and silent during the lesson can be among the effective methods of encouraging students in schools and themselves to master English language and Biology subject. They said that the approach assisted them to gain confidence as they become confident even before they appear in the class to teach.

### **4.2 MICRO-TEACHING CASE LESSON TWO**

This was the second case session in the implementation of LSP to undergraduate students where three case lessons were prepared and implemented on the 18<sup>th</sup> April 2018. The lessons were on Nutrition in plants, Types and functions of food substances, and urinary system.

#### **4.2.1 Pre-lesson Discussion**

Student teachers meet with course instructors to plan for the lessons. A total of two hours was used in two days for planning and discussions of the LSP case lessons. Three lessons namely Urinary system, nutrition in plants, foods substances were identified and practiced. We agreed that on the appropriate components of the LSP to use be used such as the use of simple English, translations and interpretation of some key lesson terms. Also we agreed that the use of varieties of activities is to be used during the lessons. However, the third student teacher appeared only once while the other three appeared two times for the pre-lesson discussion. This was due to the timetable changes of the lecture series on the student teachers' side.

#### **4.2.2 Lessons Implementation**

The first lesson to be presented was on nutrition in plants. The student teacher begin the lesson by reviewing some concepts about photosynthesis learnt previously lesson and then guide students to make reflections on photosynthesis. At this stage we observed negotiation of meanings among students using English and others using Kiswahili such as *mmea kusanisi*

*chakula, rangi ya chanikiwiti (green colour of palnts), umbijani (chlorophylls)* as a Kiswahili terms used in primary schools. The teacher was easy to write down some students' ideas on the board and crosscheck the correctness of the ideas by reading some lines on the board (here both students and teachers read at different occasions). During the lesson development, we observed two leaves, one with green colour and the second one with the yellow colour which guide a discussion on the posed question that which leaf one is expecting that photosynthesis occurs more. Another point of discussion was based on the posed task for the students to imagine that no photosynthesis in the earth, what would happen/one expect to happen. Students worked in group of five, where they discuss using Kiswahili/English but guided by their fellow and the teacher to write and present in English. Students were allowed to comment on what presented by other groups.

The second lesson was about food substances focusing on the types and functions of food substances. The student teacher lead a discussion on some terms used in the lesson as food we eat and food substances we consume. Here emerged a discussion on the differences between food and food substances where later it was agreed that when mentioned ugali, rice, meat, cassava, magimbi (yam), machalari (boiled bananas) you are referring to food. The idea here was to use as many terms used in our families as possible so as to contextualise the lesson. In the same line, discussions on food substances such as carbohydrates, proteins, fats and oils, vitamins, mineral salts, water, and roughage as well as their contribution/functions on human body were aired out.

The third lesson was about Urinary system. In this lesson we observed a model that shows the process of urine formation and urination. We observed how the student teacher related what was identified in the model and the reflections with what is written on the textbook. This was facilitated by the activity of identifying the part on the model, relate to what is drawn in the text book and their respective functions were read loud by students during the lesson. Teacher used the chalk board to write down some notes on the board, students write some words and sentences on their note books as well as pronunciations of some terms and presentations during the lesson.

#### **4.1.3 Comments and Observations made by Student Teachers**

Five student teachers had an opportunity to give their opinions about the given lessons. Four student teachers out of five call the proper language use in asking questions. One said that we need to formulate our question properly before asking them in the classroom to avoid embarrassment before students in class. In this the student said it is more proper to ask, "what food substances do we eat' when we want students to mention ugali, rice, etc and not, "what we are eat?" as observed in this lesson. Another student commented that when one asks, *what food do we eat* or *what food substances do we eat*" then the teacher has to expect two different responses from students. However, one student out of five commented on the use of the terms, "**basic foods and basic food substances/nutrients**" to be explained adequately to avoid a confusion between Ugali and carbohydrates respectively.

#### **4.1.4 Comments and Observations made by Instructors**

Language specialist observed some issues related to pronunciations of some words with improvement. These included the decrease in errors such as *zis, zat, in ze* where there is a notable improvement. She said, ***“I can see some improvement in pronunciations of words compared to the previous sessions. However, I heard one student reading sirii instead of three and the student teacher didn’t care about it. Let us be conscious of the language use including proper pronunciations of words during the lesson. We should remember to assist students when you will be teaching in schools”*** The expert said also some questions asked by student-teachers were not formed well and failed to convey exactly what the teacher needed. For example the question, ***“what kind of food is Ugali?”*** The question may be asked, ***“What food nutrients/substances are there in Ugali in large amount?”*** When you want students to mention food substances present in Ugali in large amount such as carbohydrates.

The subject content specialist said that there are some sentences presented by students during the lesson which are biologically not correct though grammatically and linguistically are correct. She mentioned sentences such, ***“Ripe bananas provide the body with energy”*** instead we need to say, ***“Ripe bananas contain sugar which provides the body with energy”***. The other comment raised was the appreciations of the use of the model of the urinary system improvised and used during the lesson. It was observed that during the use of the model integrated with the use of the text books made the lesson become engaging and students were always active in learning. This eventually ended up with the call to student teachers to develop the competences in improvising some of the media and the use of textbooks during the lessons.

#### **4.1.5 Findings from Student Teachers’ Interviews**

19 student teachers were interviewed about what they learnt during the lessons and what they would like to recommend improving the teaching practises. Most of them (17 out of 19) appreciate the LSP initiatives to make them fluent in English language and Biology language. 6 of the 17 said with this approach many of them are ready to talk without any fear especially when they stuck in talking can through Kiswahili term and then assisted to get the English term. 4 of 17 said that pronunciations and writing activities during lessons are the perfect help to encourage us to develop fluency in this foreign language. One said that, if this is working for us, then it will work even in schools where nearly all students in Form I are struggling very hard with the English language. Though some student-teachers feared if at all they will get language specialists to assists them in teaching Biology as the case in this method course at UDOM. Another student teacher expressed his revelations that she joined pre-service program simply because the loan and employment are much more guaranteed. She said that, ***“I was not interested in teaching, but through these micro-lessons am attending in this SC 224, and then I feel motivated and more committed to teach”***.

#### **4.1.6 Post-lesson Discussion**

All the three student teachers expressed their feelings that most of the preparations’ discussions were the backbone to their today’s success. However, they promised to work hard

in developing competences in using textbooks and teaching aids such as models and real objects during lessons.

### **4.3 CASE LESSON THREE: REPRODUCTIVE PART OF FLOWER: TESTING FOR PROTEIN AND NON-REDUCING SUGAR IN FOOD SAMPLES**

#### **4.3.1 Pre-lesson Discussion**

LSP team in Biology group had time to plan for a lesson. The subject specific focus of the lesson was to enhance learners' knowledge on reproduction in flowering plants, to enhance skills of food testing in a food sample, to inculcate the observation, analysis, discussion and reporting skills.

In the aspect of language, the focus was to help student teachers to learn some of the commonly English words used and how to make meaningful sentences. In the part of LSP, the lesson aimed at helping learners to practice the use of LSP ideas in teaching. The emphasis was to assist learners to be able to use other languages strategically so as to enhance learning.

The lesson was conducted in group one. It was taught using the micro teaching method. The aim was to help learners to practice teaching, learn from each other, and practice how the practical can be prepared in the laboratory as well as how LSP can be easily integrated in their teaching.

Three students presented their microteaching case lesson. One female student teacher taught the practical lesson about reproductive parts of a flower. Two male student teachers taught the practical lesson of food test. While one male student teacher tested for protein in a food sample, the other one tested for non-reducing sugar in a food sample. The rest of the class members assumed the level of form III class.

The course instructor worked closely with the three student teachers so as to advise them and guide them in the preparation of their lessons. The preparation involved planning how the lesson will be conducted, establishing the theory part of the experiment and preparing the practical manuals. Then the respective students collected the specimen/sample to be used in the experiment and tested.

Following the established procedures, concerned student teachers tested the experiments so as to be aware of each and everything before going to the actual lesson in the class. The trial experiments helped student teachers to make some correction in their plans. As usual, the course instructor insisted on the precautionary measures to be addressed in each experiment.



### **4.3.2 Lesson Implementation**

The student teachers presented their micro lessons. Each of them used 20 minutes. The first presentation was about reproductive parts in flowers. In that lesson, a presenter had a reading activity for students where learners were required to read the theory part of the practical attached together with the practical manual. One student read while others were listening.

Thereafter, from the passage she asked learners about key issues understood when reading the passage. Those issues were the male reproductive parts of the flower, female reproductive parts of the flower, unisexual and bisexual flower, external and internal reproductive structures of the flower. She guided learners to identify those external reproductive parts of the flower using the already distributed flowers.

Also, a male student teacher presented a lesson about testing for protein in a food sample. He used brainstorming technique to involve students into defining what a food is. He had already written procedures were by few students were given tasks, one to read the procedures and others to perform the experiment basing on the procedures.

Similarly, the third male student presented a micro lesson on testing for non-reducing sugar in food sample. This also had some procedures for students to read and follow during the experiment. Despite the weaknesses noted, this student showed the efforts to make the learning environment active.

Despite their good image towards mastering the lesson and LSP implementation, one of the student teachers was struggling in the use of the words “this”, “that” and “few” in a sentence. Another presenter was noted to have a problem in pronouncing a word “substance” (sabu stance), “heard” (hiyad). He was noted to commit some grammatical errors in the use of English determiners. For example he had a sentence “use one minutes”.

### **4.3.3 Comments Given by Student Teachers**

After the micro lessons students were given chances to comment on the lessons. During their comments students focused on teaching methods involved in the process as well as the focus of the lesson. This is because during the lesson one student teacher was driven by the students question and went out of focus.

They appreciated the fist presenters as she tried to involve many learners in the lesson, was confident and used various LSP techniques. Such techniques include defining difficult words using simple English, involving learners into reading for understanding. This was evident since after reading she involved learners into sharing what they have understood from the

passage. Also she involving learners into writing activities whereby learners were required to observe a flower section under a hand lens and write what is seen.

#### **4.3.4 Comments by Course Instructors**

After students' comments and discussion, a course instructor had a chance to comment about the lesson. Among many others, her comments focused on helping learners on proper use of the word "few". This is because during presentation a student teacher had only one hand lens but she said "Because of few lenses...." Also she corrected the statement "*this is our flower*" spoken by a teacher while touching a hand of a boy holding a flower.

In doing so she helped learners to know the proper use of "this" and "that". She used students themselves to correct their own mistakes. She also commented on teaching techniques used by a teacher, accurate observation and recording observation. As usual, the lesson observers were given chances to comment about the lesson.

The language expert commented on the lesson. Their main focus was to advice students on the importance of LSP in reducing teachers' burden in teaching, helping learners to learn for understanding as well as helping learners to learn English. She also advised learners on the importance of team work in lesson preparation.

#### **4.3.5 Interview Report from the Student Teachers**

19 students teacher attended the lesson were randomly selected to be interviewed to give their opinions on what they learnt from the given lessons and areas they would like to suggest to improve their learning in this Biology method course. 12 student teachers mentioned that they learnt important procedures in handling practical sessions and the challenges of demonstration method during learning. Some of these said that preparation of practical sessions are time consuming but pays a lot when come to the teaching process in the class and students learn a lot from it. 17 student teachers appreciated the involvement of students in performing activities in the class rather than teachers. One said that, "*we are acting as students in these sessions, but myself I was engaged to the extent that I felt as student and forget my role as a student teacher*". Two student teachers suggest that for effective learning practical activities should also involve students in the preparation part rather than only teachers as the case in many schools. She said, "*Yes, we can involve students to bring flowers and ask them to identify some parts and their respective functions using the textbooks we have*"

#### **4.3.6 Post-lesson Discussion**

#### **4.4 CASE LESSON FOUR: DETOXIFICATION PROCESS IN THE LIVER: THE EFFECT OF TEMPERATURE AND pH ON ENZYMES ACTIVITIES USING THE LIVER CELLS**

##### **4.4.1. Pre-lesson Preparation**

This lesson was conducted in group two. The focus was for learners to master practical skills including preparation, observation, recording, analyzing, discussion, concluding and reporting the finding of scientific experiments.

In language aspect the main objective was to help learners practice LSP and to help learners with language challenges. In order to attain this target, micro teaching method of teaching was thought important and so was adapted.

Three students presented their micro lessons. Through micro teaching method, it was easy to note students' ability in implementing LSP while teaching. Also microteaching helped to reveal learners language challenges for both presenters and other class members. That was possible because, after micro lessons learners had a wide range of talking while discussing and reflecting about the presentations.

The course instructor had several meetings with student teachers who were the presenters. The aim was to discuss their plan of teaching and to develop materials for teaching and learning process. Students under the instructors' guidance had chances of doing and redoing their practical so as to improve some aspects depending on the results of the experiments and to master the practical skills before taking the lesson to their fellows. The course instructors insisted on observing precautionary measures so as to avoid any harm from the experiments.

##### **4.4.2 Lesson Implementation**

Three students taught their micro lessons in a period of 60 minutes each being given 20 minutes. One student taught a lesson about detoxification process in the liver. The other students taught about the effect of temperature on enzymes activities using the liver tissues. The last student taught a lesson on the effects of Ph on enzymes activities using the liver tissues.

During the first lesson a student teacher was not confident. He prolonged the introduction part of the lesson to the point of losing direction. He involved students in doing some activities to demonstrate the detoxification process in the liver. The students showed problems in forming sentences and using spellings of some words but he did not care about

helping them. He also wrote two times on the white board “detoxication” instead of detoxification.

The second presenter started by highlighting the theory part of the experiment then involved learners into the reading of the theory part of the practical. Thereafter learners were required to perform the practical under the guidance of the teacher while others were reading procedure one after another.

The teacher helped learners to understand some statements in Kiswahili words to enhance understanding. However, he didn’t consider helping student repeat a new word in English instead he told learners to repeat the same word in Kiswahili. Whenever learners had questions, he posed those questions to students themselves so they can thin and answer. Had problem in pronouncing the word read (lead), please (plizi), the (ze), something (somesing). Also he had a problem of forming sentences. For example he said “that are our material that we are going to use”.

The third presenter managed to use LSP in a convincing way. Despite some mistakes in pronouncing a word condition (condition) a student teacher managed to do the following; use Kiswahili strategically, refer to learners’ primary school knowledge, helped learners to properly pronounce some words such as concentration, involved learners in repeating to pronounce words correctly after being corrected, involved learners in reading some sections in the book.

#### **4.4.3 Comments Given by Student Teachers**

After their presentation, student teachers (whole class) were given chances to comment about the lessons. In their comments, all students in the class congratulated the third presenter as he managed to use LSP in the way they have noticed. One student said *“huyu sasa ndio amenisaidia kuelewa jinsi gani LSP inaweza kutumika katika kufundisha”*. On the other hand they pointed out some challenges as noted from the lessons such as improper pronunciation of the words “condition”, “the”, “think”. Also one student raised a concern that one presentation was very poor.

#### **4.4.5 Comments Given by the Course Instructors**

After students’ comments, a course instructor commented on the presentation as well as students comments about the presentations. She helped learners on the proper ways of criticizing or challenging others works in a non embarrassing manner. In general she was

talking about communication skills, choice of words and respecting ones ideas and efforts. She was addressing someone's comments on the very poor presentation.

She also acknowledged that the third presentation gives a picture of LSP being implemented in the class. She reminded learners to continue practicing on the proper pronunciation of the words "the", "please", "read" and "something".

The language instructor insisted student teachers to help learners practice pronunciation of the difficult word in the class before being given an assignment to practice at home. She corrected some errors committed by presenters, for example, the spelling of detoxification. She insisted teachers to be careful with what they write and speak since learners trust them much as a result there is high possibility of learners' language being influenced by their teachers. Thereafter, other observers commented on the lesson. In their comments, they insisted student teachers to consider the last micro lesson as a model lesson for LSP implementation in class.

#### **4.3.6 Post-lessons Discussion**

The LSP team had a chance to reflect on the lessons. The team agreed that, to a greater extent the last micro lesson had been good in terms of implementation of LSP in the classrooms. They agreed to treat the last micro teaching presentation as a model lesson for others to learn. Also the team felt the need to attach other students struggling in understanding LSP ideas with the last presenter.

#### **4.4.7 Findings from Student Teachers Interviews**

19 student teachers were interviewed. All of them said that the lesson was engaging, full of learning experiences and they enjoyed it much. All of them said they didn't imagine if the liver which can be cheaply and easily available can be used to demonstrate the detoxification process. Two said that most teachers are focusing to the practical activities that happen in the national examinations and had never think of the practical activities such as this which can enhance students' learning of some theoretical facts such as enzymes activities.

### **4.5 LSP MICRO-TEACHING CASE LESSON FIVE**

#### **4.5.1 Pre-lesson Preparation**

The main objective of this lesson was to help student teachers to practice LSP and to help those with language challenges. In order to achieve this objective, micro teaching method was thought important and so was adapted. The lesson was conducted in group one.

Before starting the presentations by the student teachers, the instructor reminded them about the LSP issues. The aim was to raise student teachers awareness on language issues and how it can be integrated in the teaching and learning process so as to maximize students' learning.

Three students presented their microteaching case lessons. One female student teacher taught about Transport of Materials in Animals. One male student teacher taught about HIV/AIDS and STIs while another male student teacher taught about Growth .The rest of the class members assumed as form II class.

Three students were chosen to choose topics of their interest and prepared LSP lessons. The three student teachers with the assistance of the course instructor planned the lesson by reviewing the concept of lesson study pedagogy and its implication in the class. They prepared a lesson plan with LSP elements been integrated. It was discussed about the use of simple language in the class which would be well understood by students in the class and where necessary the use of Kiswahili and/or first languages strategically to facilitate the achievement of the intended objectives.

#### **4.5.2 Lesson Implementation**

All three student teachers managed to implement LSP during micro-teaching, with some variations. They were able to help their students on how to pronounce words correctly, reading the texts, writing some key concepts on board which they thought were difficult to be understood. For example one female student teacher helped her students to pronounce and write words like *aorta, arteries, transfusion, and both*. She was also gender sensitive by pointing both female and male students to respond to the questions even if the female students were not ready for it.

Although student teachers managed to a large extent to implement LSP during micro-teaching, they had language problems as identified here;

Some are still very poor in pronouncing some common English words like *that(zati), This (Zisi), Those (zozu), Another ( anaza) and Growth (grousi)*

Grammatical errors are still committed by them, like subject- verb agreement, the use of determiners, tenses and errors of addition.

Examples of S- V agreement errors are; *I want two student to come in front, Is the parts of the plants and Is the main arteries*

Examples of errors in the use determiners; *This students...*, *Another challenges...* and *All part of the body...* and the examples Tense errors are; *Myself I didn't understood*, *Are you understand?* and *We have see that.....*

#### **4.5.3 Comments Given by Student Teachers**

As usual soon after the micro lessons done by the three student teachers, it was an opportune time where by all members of the class used this time of forty minutes to discuss the three lessons by giving suggestions, comments as well as asking questions. For example one of them commented on LSP that it is about translation of Biological terms into Kiswahili. They also commented on the poor language skills like pronunciation and writing.

#### **4.5.4 Comments Given by Course Instructors**

At the end of this lesson the course instructor commented on methodology and content. He helped them on a proper way of using the chalk board and how to introduce the lesson to draw students' attention. He also commented on how to ask students some questions in classroom.

Lastly, having seen all the language problems committed by the student teachers as it has been identified, the language expert helped them on how to improve in the use of LSP as well as all aspects of the language especially grammatical skills. She corrected all the language errors committed by both the presenters and the rest of the class. She also cleared all the doubts about LSP raised during the discussion.

#### **4.5.5 Post-lesson Discussion**

The Biology team reflected on the three lessons implemented by the student teachers. They agreed that the female presenter who taught the topic of transportation of materials in animals did wonderful in the implementation of LSP compared to the two presenters. She made the whole class active and she was gender sensitive. All in all, all presenters improved to a large extent on the usage of LSP.

#### **4.5.6 Findings from Student Teachers Interview**

Soon after the lesson, the student teachers and the instructors had a session for post lesson discussion. The instructors asked the students on how they find the implementation of LSP. The following are the responses given by them;

LSP is good and useful in teaching, in the sense that one can use the well known language to teach the students the content of Biology as well as the English of Biology.

Also LSP has changed me the way I was teaching Biology since I never cared about the language of Biology. From now I will be helping my students to learn and understand the language of Biology.

## **4.6 LSP MIC-ROTEACHING CASE LESSON SIX**

### **4.6.1 Pre-lesson Observation**

The main objective of this lesson was to enable student teachers to master the methodology, content and LSP approach. Micro teaching method was used in group number two.

Three students presented their microteaching case lessons. One male student teacher taught about Transportation in Plants. Another male student teacher taught about Nutrition in Plants while the female student teacher taught the topic of Reproduction in Mammals. The rest of the class members assumed as form III class.

Three student teachers were selected randomly among those who had not presented in any session of microteaching so that to make them familiar with lesson study pedagogy (LSP). Each student teacher selected a topic of interest and prepared the lesson ready for classroom presentation.

Student teachers with assistance of the course instructor planned the lesson before the class by reviewing the concept of lesson study pedagogy and its implication in the class. It was discussed the use of simple language in the class which would be well understood by students in the class and where necessary the use of Kiswahili and/or first languages strategically to facilitate the achievement of the intended objectives.

### **4.6.2 Lesson Implementation**

The general observation was that there was an improvement on the implementation of LSP, by all three student teachers during micro-teaching, although there were some minor differences among them. They were able to help their students on how to pronounce words correctly, reading the texts, writing some key concepts and use of simple sentences. For example the first presenter helped the students to pronounce Biological terms like *Oestrogen hormone*, *corpus luteum* and *ovulation* as used in the topic of reproduction.

The presenter number two wrote the terms on the board and helped the students to pronounce them. Those terms were external parts of the leaf like *Lamina*, *Petiole*, *midrib*, *Veins*, *Apex* and *margin*. He aimed at helping them to pronounce as well as to see the correct spellings of those biological terms.



Although there was some improvement on the use of LSP to all student teachers during micro-teaching, they had language problems as identified below;

Some are still poor in pronouncing some common English words like *Thanks, with, photosynthesis, together other* and *the*. This was done by the third presenter who taught the topic of Nutrition in Plants.

Grammatical errors are still a problem to all presenters, like subject- verb agreement, the use of determiners, tenses and errors of addition. This is because student teachers were not even able to correct their students on the grammatical errors they committed when they were pointed to answer questions.

Examples of S- V agreement errors are; *Is the parts of the plants where does photosynthesis takes place, What are the function of the mid rib?*

Examples of errors in the use determiners; *Those issue, Form a groups and This are enzymes.*

Examples Tense errors are; *what have you understand from what your fellow read? and Last period we learn about.....*

#### **4.6.3 Comments Given by Student Teachers**

Forty minutes were used by the whole class to contribute anything they thought important to enrich the presenters' presentations especially on the usage of LSP. The most interesting issue was that majority of the student teachers were able to give the strengths and weaknesses of the presenters which made the work of the course instructor and the language expert to be easy and simple. They commented on both language strengths and weaknesses of each presenter.

#### **4.6.4 Comments Given by Course Instructors**

At the end of this lesson the course instructor commented on methodology and content. He helped them on a proper way of formulating groups where he insisted that it is not necessarily every time teacher asks the students to form groups while the classroom situation does not allow that method to be used.

He suggested that teachers may ask students to discuss in pairs which could work out to the class situation. Course instructor also emphasized the importance of setting time limit in group or pair discussion if such a method is being used by a teacher during class room teaching and learning.

On the content part course instructor asked the student teachers why the presenter asked the definition of the word leaf? Was it necessary to define leaf? It was noted some trivial tasks like define the term leaf should be omitted as they consume time.

Lastly, the language expert assisted them on all the language problems committed by the student teachers who presented in class together with those who contributed during the discussion. She also insisted on the importance of using LSP in classroom as it enhances learning. She also assisted them to clear the misconceptions about LSP.

#### **4.6.5 Post-lesson Discussion**

The Biology team had to sit for few minutes for post lesson discussion. They discussed about the main language problem raised by the language expert facing the student teachers is the grammatical skills. Almost all student teachers who presented in classroom were able to correct their students other language problems like pronunciation, spellings but not grammatical problems like tense, S- V agreement and the like. Therefore the team agreed that more emphasize to be given on grammatical skills by the language expert.

#### **4.6.6 Findings from Student Teachers' Interview**

19 student teachers were interviewed. Most of them (15 out of 19) said that the LSP has helped them as student teachers to improve in English especially in areas which we were not competent enough like grammatical skills, pronunciation and we came to realise that we have been making so many errors in English, after the language expert being assisting us in all aspects of the English language.

They also commented that they wish if their teachers in lower levels used LSP.

### **5.0 Conclusion and Recommendations**

A total of 15 micro-teaching case lessons which were implemented with 15 student teachers during the Biology method course SC 224 are explained in this report. To assess the students' learning a total number of 95 student teachers were interviewed in a focus group discussion, 19 of them from each of the five microteaching case lessons. However, there were a total of 266 student teachers in two groups, each with 133 student teachers during the Microteaching session classes. All these student teachers were exposed in the LSP approaches in teaching and learning Biology. The observation from the lesson preparations, lesson implementations as well as interviews after lesson implementations and post lesson discussions indicate that student teachers develop skills and competences in using LSP approaches.

Moreover, 5 lecturers who included 1 English language specialist, 1 Biology content specialist, 3 Biology methods specialists at the University of Dodoma were involved in facilitating the course. Also, 2 lecturers, 1 Biology specialists and 1-Language specialist from the St John's University of Tanzania were involved in some of the Microteaching case lessons. Also 3-tutors, each from teacher colleges namely Butimba, Mpwapwa, and Morogoro Teachers colleges were invited to observe some of the case lessons. In this category, a total of 10 experts were involved in the implementations of the LSP Biology subjects at the University of Dodoma.

After the completion of this cycle, Biology group is expected to develop one video clip of the exemplary LSP Biology lesson. Again, we are expecting to sustain the knowledge and competences we developed in implementing LSP in Biology in other related courses such curriculum courses and content courses.

## 6.0 Appendices

### APPENDIX A

SC 224 COURSE OUTLINE  
THE UNIVERSITY OF DODOMA  
COLLEGE OF EDUCATION



### SCHOOL OF CURRICULUM AND TEACHER EDUCATION

### DEPARTMENT OF SCIENCE, MATHS AND TECHNOLOGY EDUCATION (SMATE)

### SC 224: Biology Teaching Methods

### 10 Credit Course

#### Course Description

This course is intended for second year teacher education students who are developing to become biology teachers in secondary schools and teachers' colleges. The main purpose of the course is to provide student teachers with an opportunity to experience authentic pedagogical practices involved in teaching Biology subject. Thus, among other things, this course will expose student teachers to real practices of teaching Biology through designing and implementing biology micro-teaching lessons on selected units.

#### Competencies

Students teachers are expected to develop the following competences after successful completion of this course:

- An understanding of the goals and basic principles of learning biology subject to secondary school students
- Develop necessary skills for analyzing biology subject curriculum materials
- Ability to design and carry out basic biology experiments to verify phenomenon which can be explained scientifically
- Plan and conduct effective interactive instructional sessions that promote active learning in biology
- Conduct effective assessment of students' learning progress and achievement in Biology

#### Objectives

- Discuss aims and objectives of teaching biology to secondary school children in Tanzania; and examine basic principles of teaching biology content to secondary school students
- Conceptualize “competence-based” teaching/learning (or curriculum) with reference to biology subject

- Analyze local and international biology curriculum material (s) i.e. syllabus and/or textbook and compare them on the basis of set of criteria
- Examine biology concepts that are commonly taught in secondary school and the misconceptions that impact students' understanding of these concepts
- Prepare schemes of work, lesson plans and learning resources appropriately
- Prepare and implement micro lessons (10-15 minutes long) based on interactive methods
- Design practical lessons to enhance learning of selected concepts in biology
- Discuss assessment techniques and design competence based assessment packages

## COURSE MODULES

### 1. The Objectives of Teaching Biology in Secondary Schools and the Concept of “Competence-Based” Curriculum (4hrs)

- 1.1. Why teach biology in schools?
- 1.2. Teaching: A purposeful means to an end
- 1.3. How to teach biology (as a science subject) to effectively cause learning of biology concepts to students?
- 1.4. Conceptualizing the term “competence-based” curriculum in biology classroom
- 1.5. Conceptualizing about Language Supportive Pedagogies (LSP) in Biology learning

### 2. Analysis of Biology Curriculum Materials (6hrs)

- 2.1. Organization of an ordinary/advanced level secondary school biology syllabus
- 2.2. Analysis of the Tanzanian O-level biology syllabus and equivalent international syllabus (IGCSE Cambridge syllabus).

**Activity 1:** Students to analyze and compare the current national and international ‘O’ level biology syllabuses.

**Activity 2:** Compare A-level syllabus both national and international (IGCSE) syllabus.

***NB: Focus on identifying the structure and activities suggested in the two syllabi and their respective philosophical assumptions.***

**Activity 3:** Select ONE O-level textbook from Tanzania Institute of Education (TIE); analyze its content in terms of sequential organization of content, appropriateness of language used, relevance of the content etc.

### 3. Managing and Organizing Biology Laboratory (10hrs)

- 3.1. Discussion on the typical school Biology laboratory (rules, precautions, fume chamber, chemical/apparatus lager, first aid, ordering of lab chemicals and facilities, etc
- 3.2. Preparation and storage of some solutions and reagents common in biology practical work/experiments
- 3.3. Preparation and administration of selected practical/experimental activities in ‘O’ and ‘A’ level biology

3.4. Developing practical skills such as: microscopy, taxonomy, microbiological techniques, etc

**Activity 1:** Students to examine the current biology syllabuses (“O” & “A” level) and outline practical activities suggested. Discuss possible ways of improvising in the suggested practical activities.

**Activity 2:** Read the current biology teacher guide from MoEVT and compare practical activities proposed in the guide with those indicated in the syllabus. Use the guide to prepare ONE practical activity

**Activity 3:** Read any of the C.S.E.E instructions on preparation of biology practical examination from NECTA. Use the instructions to prepare required chemicals, specimens and apparatuses (*Instructions document to be provided*)

#### **4. Assessment and Evaluation in Biology (4hrs)**

4.1. Approaches to assessing and evaluating students learning progress and achievement

4.1.1. Formative approaches to assessment; portfolio assessment, performance assessment and project work

4.2. Discussion on practices in designing traditional assessment tools, focusing on:

4.2.1. Writing/setting questions for different cognitive levels (Blooms taxonomy of cognitive domain)

4.2.2. Table of specification and balance of content/difficulty level in written tests and examinations.

4.2.3. Subjective (e.g. essay) and objective (e.g. multiple, matching) question items

**Activity 1:** Examine one past biology examination and reflect on: cognitive demands of the examination items and assess the content validity of the exam

**Activity 2:** Prepare an end-of-topic test to assess students’ achievement of intended learning objectives as indicated in the scheme of work and lesson plans

#### **5. Instructional Planning in Biology (6HRS)**

5.1. Discussion on effective ways of;

5.1.1. Questioning and responding to students’ questions

5.1.2. Organizing individualized and group activity

5.1.3. Managing practical and fieldwork; and

5.1.4. Using teaching media, including the chalkboard.

5.2. Discussion on the constructivist approach in teaching biology

**Activity 1:** Read selected reading materials on the constructivist approach of teaching and discuss its practicality in teaching selected biology concepts

5.3. Interpreting the syllabus into instructional materials

5.3.1. Discussion on the features of scheme of work, lesson plan, lesson notes and practical worksheet

**Activity 2:** Select ONE topic from National or Cambridge syllabus and prepare scheme of work to be implemented in a specified period of time (timing to depend on the cognitive demand of contents of the topic). From the developed scheme, prepare TWO 40-minutes lesson plans (One practical and one non-

practical lesson) and their respective practical sheet and lesson notice (remember to focus on most important concepts as you prepare specific lesson notice)

## **6. Classroom Presentation: Developing Authentic Instructional Experiences (15hrs)**

- 6.1.1. Students to select themes/topics that are considered difficult or poorly taught in the 'O' or 'A' level syllabus and prepare units for instruction or presentation during microteaching exercise. The following themes may be used based:
  - 6.1.2. The concepts of evolution and adaptation
  - 6.1.3. Genetics and genetic disorders
  - 6.1.4. Ecology and environmental education; using the environment while teaching;
  - 6.1.5. Reproduction and diseases of the reproductive system.
- 6.2. Microteaching presentation (15 minutes) of selected lesson followed by peer feedback and reflection session
- 6.3. Reflection/assessment of the course

## **MODE OF ASSESSMENT**

### **A. COURSE WORK (50%)**

Assignments (10%)

Mid-Semester Test (15%)

Selected content from a well maintained portfolio (10%)

- i. Write a personal experience of learning biology from primary school to university. In writing consider the following questions
    - What biology have I learned? (Type of knowledge and ways of learning involved).
    - Which topics do I feel most comfortable and/or uncomfortable and why?
    - What is the effect of Biology learned in my life?
  - ii. Write personal experience of teaching Biology
  - iii. Well prepared lesson reflection notes
  - iv. Scheme of work, lesson plans (for both practical and theory lessons), notes as well as practical sheet
  - v. An end-of-topic written test (the focus will be on relevance and balance of cognitive demands of the set items)
- II. Presentation of micro lessons (microteaching) (15%)

### **B. END OF SEMESTER UNIVERSITY EXAMINATION (50%)**

## **Facilitators:**

1. **\*\*Prosper Gabrieli (Office no: COED ADM 228, 0764100174)**

2. **\*\*Josephat Paul (office no: COED ADM 202, 0764047506)**
3. **Flora Mbembe**
4. **Salum Abdallah**
5. **Huruma Olofea**

**\*\*Means course coordinator**

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## TIME FRAME

MODULE	LEADING FACILITATOR	DURATION	DATES
<b>ONE</b>	Dr. Prosper Gabrieli	1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> Weeks	19 <sup>th</sup> March -6 <sup>th</sup> April
<b>TWO</b>	Dr Prosper Gabrieli	4 <sup>th</sup> , 5 <sup>th</sup> Week	9-20 <sup>th</sup> April
<b>THREE</b>	Flora Mbembe	6 <sup>th</sup> , 7 <sup>th</sup> , 8 <sup>th</sup> Week	23 <sup>rd</sup> – 11 <sup>th</sup> May
<b>FOUR</b>	Salum Abdallah	9 <sup>th</sup> – 10 <sup>th</sup> Week	14 <sup>th</sup> – 25 <sup>th</sup> May
<i>Mid Semester Test</i>	<i>ALL</i>	<i>10<sup>th</sup> Week</i>	
<b>FIVE</b>	Josephat Paul	11 <sup>th</sup> , 12 <sup>th</sup> Week	28 <sup>th</sup> – 08 <sup>th</sup> June
<b>SIX</b>	Huruma Olofea	13 <sup>th</sup> – 14 <sup>nd</sup> Week	11 <sup>th</sup> – 22 <sup>rd</sup> , June
MICROTEACHING	ALL	15 <sup>th</sup> Week	25 <sup>th</sup> – 29 <sup>th</sup> June
<i>UE's</i>	<i>ALL</i>	<i>16<sup>th</sup> – 17<sup>th</sup> Weeks</i>	<i>UE's</i>

## TIME TABLE

Day	Duration/time	Venue	Group
<b>MONDAY</b>	<b>8.00 – 10.00</b>	<b>LR 1</b>	<b>GROUP 1</b>
<b>WEDNESDAY</b>	<b>8.00 – 10.00</b>	<b>LR 8</b>	
<b>TUESDAY</b>	<b>8.00 – 10.00</b>	<b>SR 2</b>	<b>GROUP 2</b>
<b>WEDNESDAY</b>	<b>2.00 – 04.00</b>	<b>LR 4</b>	

Note:

- Attendance at all lectures, laboratory sessions, seminars and test/examination is important.

2. If you have any serious problem which leads you to miss either of the sessions in (1) above please provide official information prior the session through CR or direct to course instructor
3. Be punctual and ready to learn
4. No make-ups will be given for tests or lab practical activities without a valid excuse.
5. Tests and assignments must be written in pen and all drawings must be done in pencil.
6. Assignments must typed and turned in on time (as per agreement) in order to receive full credit
7. You should be prepared for laboratory by reading the exercises ahead of time.
8. You are responsible for reading the text before the subjects are covered in lecture.
9. Cell phones must be turned off or muted during class and stowed away.
10. While in the laboratory you must follow the laboratory regulations.
11. Make sure you participate fully in group work and ready to answer questions or do presentation on behalf of the group.
12. Show seriousness in all the tasks given including assignment, tests, portfolio preparation as well as micro-teaching.

