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## Challenges Faced in Implementing SPICES Model at Moi University College of Health Sciences, Eldoret, Kenya

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### Abstract

**Background:** The foundation of SPICES Model of teaching and learning is in its facilitation skills and resources which are vital to student learning. SPICES Model is a mode of teaching in the undergraduate medical curriculum at the Moi University College of Health Sciences.

**Objectives:** The objective of this study was to outline the challenges facing innovative teaching and learning method at the College of Health Sciences.

**Methods:** 274 students, 65 lecturers and 9 administrators were recruited into the study. Self-administered questionnaires with both qualitative and quantitative were used in data collection. Questionnaire utilized a five point Likert scale (1-Totally disagree, 2-Disagree, 3-Not Sure 4-Agree and 5-Totally Agree). Cronbach's alpha, median and inter-quartile range (IQR) was calculated in SPSS 22. P-value less than or equal to 0.05 was taken as statistically significant. Ethical approval was obtained from the Institutional Review and Ethics Committee (IREC) of Moi University and Moi Teaching and Referral Hospital.

**Results:** 58 (23%) of students said that the program is confusing; rarely do we know what is expected of us. Others, 72 (29%) said it demands a lot from the student; while 58 (23%) hold the view that this system gives excuse to the lazy lecturers to avoid going to class to teach in the name of the students doing self-directed learning. Sixty two students (25%) think that tutorials are overcrowded. Majority of the lecturers 40 (62 %) said that SPICES Model is not improving with a large number of them 26 (40 %) saying all members of staff should be re-trained on SPICES Model of teaching and learning in order to improve it, however some of them 5(8 %) wanted SPICES Model to be abolished. There was no statistical significance between the number of years the lecturers who have been teaching and whether SPICES Model was improving or not as the p-Value ( 0.138) this result was not statistically significant at  $p < 0.05$ .

**Conclusions:** The main challenges were the inadequate teaching and learning resources and training in SPICES Model of teaching and learning to both staff and students. There is overcrowding in all courses in the College, to mitigate on that, management should consider reducing intake until such a time that new facilities are in place.

**Recommendations:** The college should organize annual workshops; separately for both students and lecturers to refresh on SPICES Model of teaching and learning and this will increase acceptability of this program moreover there is need to increase teaching and learning resources; such as teaching space, laboratories and library; whiteboard, LCD projectors, computers, e-books and internet connectivity and reduce intake until such a time that new facilities are in place.

### Key Words

SPICES Model; Lecturers; Challenges; Students

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### Introduction

#### Innovative Teaching and Learning Method

Innovative teaching and learning method called SPICES Model; commonly referred to as problem-based is a program or series of events which the teacher implements to assist the student to remain focused on what that individual is doing. It stimulates the students' ability to engage in problem-solving activities that make a student an expert in

his/her area of concentration. This process makes a student an active learner and the teacher a facilitator (Zhu, Wang, Cai, & Engels, 2013).

Due to the shortfalls of lecture method in teaching and learning, constructivists searched for a solution to the existing problem (Cotič & Zuljan, 2009). Constructivists emphasized a collaborative approach whereby both the lecturer and the student will participate. Yew and Schmidt argue that the

constructivists were looking for approaches whose instruction method would emphasize collaborative and self-directed learning. They wanted an approach which is flexible to the teacher and the student (Yew & Schmidt, 2012).

They considered several approaches such as problem-based, student-centered, project-based and self-directed programs. In all these programs, the lecturer becomes a facilitator and the student is the tutor. They wanted programs which would make students work in groups using a designed problem that is tailor-made to meet their individual academic needs. This was meant to assist every student study at the level that meets students' ability (Groff & Mouza, 2008).

Innovative approach to learning was facilitated by the growth of technology in 19<sup>th</sup> century the introduction of instructional media in teaching facilitated various innovative opportunities (Hmelo-Silver & Barrows, 2006). To meet the needs of innovative teaching and learning method, majority of the institutions who adopted it opted for problem-based teaching and learning method. problem-based teaching and learning method became increasingly popular in educational institutions because of actively being able to engage students in constructing knowledge (Rezende-Filho, da Fonseca, Nunes-Souza, da Silva Guedes, & Rabelo, 2014).

Innovative method of teaching and learning adopted by medical colleges is the problem-based learning. Problem-based learning has been introduced to improve the quality of graduating health professionals. They argue that graduates taught using problem-based learning method are more competent and systematic compared to the ones trained using traditional lecture method.

### **Inception of Innovative Teaching and Learning Method**

At the beginning of 19<sup>th</sup> century, medical students were attached to a qualified doctor to learn the practical skills after going through the theory in class but towards the end of the same century Hopkins Medical School made changes that brought in radical transformation in medical education and the practice of medicine by dividing the course to cover basic sciences and practical in the hospital wards. Medical schools used small classes to enable students to use innovative methods such as Problem-based learning.

When Americans were making changes in their training of doctors and medical education as a course, Britain was also reviewing the way of training doctors. They had realized that training of

doctors was not good enough in that it emphasized on factual recall at the expense of higher level of cognitive functions such as evaluation, synthesis and problem solving (Dennick & Exley, 1997).

### **Perspective of Moi University College of Health Sciences**

In 1990, Moi University Faculty of Health Sciences, now the College of Health Sciences was started. In 1994, it became WHO Problem-Based Learning collaboration center (Kangethe, 1999).

This College had her first intake of medical students in 1990 (Daily Nation, February 8<sup>th</sup>, 1995) and adopted SPICES Model in its teaching and learning programs. This model use Problem- Based Learning (PBL) as a strategy for teaching and learning.

Currently the College of Health Sciences use innovative method to teach, with the acronym SPICES which has the following meaning:-

S = Student Centered Learning

P = Problem – Based Learning

I = Integrated Learning

C = Community Based Education and Service

E = Electives

S = Systematic

### **Student-centered**

SPICES model makes a student the center of learning. The student is the one taking the initiative to learn. It makes the student be a self-directed and learner-centered. It also makes the student a task-based person with the student taking the lead; one owns the findings and retains them for long (Abraham & Azaje, 2013).

### **Problem-based**

This method uses formulated problems as a stimulus for a teaching process; whereby students go through a tailored problem seeking for a solution. The solution students arrive at enables them internalize the process of solving problems the student will recall this knowledge content in future. Lecturers facilitate the student to do self-directed learning and the student expects the lecture to be a resourceful individual.

### **Integrated**

All the courses start with the basic sciences then it moves to the clinical; are taught in interrelated or unifying disciplines. Students are taught in a way that each relates to the other. In this program, students are exposed to the whole aspect of medicine from the beginning to the end; and for a student to move to the next class, must pass the current course, because this course builds to the course.

### **Community-Based (oriented) Education Services**

Students are taught community-based issues by allowing them to take time off from the college to stay in the community and participate in solving health-related problems. During COBES students are allowed to go and study medicine in the community using the community as a teaching laboratory; and that kindles the desire to go back to them after graduation to serve the community.

### **Elective**

An elective is when a student is allowed to go and practice his/her health professionalism in another institution other than the one that has been teaching that individual. It can be an institution within or outside the country.

### **Systematic**

The whole curriculum is taught systematically. Each unit leads to the other and students can understand the interrelationship of the course one course leads the student to the next one; able to allow the student to relate with what he/she had learned earlier. To reinforce systematic course presentation, no student is allowed to proceed to the next course before passing an earlier one.

### **Challenges in the Implemented SPICES model**

#### **Availing Funds to Run the Program**

A major disadvantage of using SPICES Model is that it is costly in all aspects. To start with there is need for more lecturers to conduct tutorials and practical in laboratories. When one compares SPICES Model and lecture method, lecture method is the cheapest in that one lecturer can teach a large group of students. SPICES Model, requires small tutorial groups of 7-10 students in a group. In lecture method, one lecturer can teach a large group of about 200 students (Prince & Felder, 2006).

#### **Human Resource**

Human Resource comprises lecturers who teach, and support staff who ensure that students are facilitated in their studies. They include library, transport and all non-teaching staff who provide services to students.

#### **Challenges Encountered by Students**

Though SPICES Model is built on principles of adult learning, still there is a possibility that the experiences of students in a given class differ; others are slow learners while others are fast enough to understand the content. The slow learners then will take home very little content in a tutorial. Prior learning experiences at times do not prepare students well; yet SPICES Model is based on the foundation that all students have the same

experiences. This raises the need to induct both lecturers and students in SPICES Model of teaching and learning because some join the program without prior knowledge (Smith, Sheppard, Johnson, & Johnson, 2005).

The real problem comes in that prior learning experiences do not prepare students for SPICES Model. Students are moved from passive class work to hands on one without making adequate preparations in orientating them. Smith suggests that every institution should have strategies for overcoming student resistance to SPICES Model by training them to appreciate. Once they appreciate it, group dynamics takes over to stimulate the group into seeking solutions (Smith *et al.*, 2005).

At Moi University College of Health Sciences, first year students are taught how to use SPICES Model of teaching and learning. Newly appointed lecturers are invited to join first years when they are being instructed on the way to use this model.

Negative attitude held by both the students towards SPICES Model is a constraint in appreciating this program one's attitude affects the outcome of what that individual is working on. If a lecturer does not present SPICES Model positively to the students; then students develop negative attitude towards it (Kang'ethe, 2013).

The other challenge that might arise is that of learning to work in groups such as tutorial groups. All along students have been sighted in large groups, but now the said student is told to work in a group of between 7-10 students as this student will feel exposed because every individual in a small group has to be an active participant. Such students revert back to their comfort zone of desiring to be taught using lecture method (Sweller, 1988)

#### **Challenges Encountered by Lecturers**

Failure to train lecturers might make some lecturers to avoid participating in the program. This was encountered by a University in Uganda when they introduced COBES program, yet the institution had not trained lecturers to know what was expected of them in supervising students during COBES. Some of the lecturers decided to keep away from joining students during COBES.

Jinadu warns of the teaching institutions getting into a crisis of missing lecturers as time goes by; if training them is not continuous. This is caused by attrition and moving to better paying opportunities. Even where lecturers have not moved to other institution; death and retirements are unavoidable (Jinadu, Davies-Adetugbo, Ogunbodede, & Adetugbo, 1997).

### **Challenges Encountered by Administrators Serving Students**

Lack of trained personnel affected several universities in West Africa. It made some administrators render services half-heartedly in that they did not understand the system. Others decided to be skeptical about the new SPICES model. When administrators start serving students half-heartedly or skeptically; it is a sign of failure on the entire program service providers who harbor suspicions in the program ends up causing friction in the system resulting into bringing it to a halt (ten Cate, Snell, & Carraccio, 2010).

### **Lack of Teaching Rooms**

Corrigan opines that infrastructure put up for a particular number of students; soon government policy change and decide to increase the number of students to be admitted. An example is The Federal Democratic Republic of Ethiopia which faced a challenge of increased number of students to be admitted to join university, they exceeded available space. Veitia argues that increased intake beyond the available infrastructure in the third world reduces SPICES model of teaching and learning to mixed or even back to lecture method. This might remain as a setback in the third world for a number of years because government policies are not pegged on revenue.

Double intake exerts pressure to all available resources resulting in graduating low quality students. This leads to overcrowding in teaching rooms and a higher student ratio to the lecturers. Tutorial groups will be overcrowded too, hence complains by lecturers concerning overcrowding and excess workload.

### **Lack of Instructional Media Apparatus**

Concerning instructional media, at times they are not enough to serve all the students. This results in overcrowding of students to one projector. Erickson urges that implementers should note that instructional media is based on the population of the students in that they are like text books (Ericsson, 2008).

Overcrowding is brought about by the lack of funds to buy more instructional media apparatus. Kei affirms this by arguing that the cost of buying instructional media is high, that they are very

expensive for institutions struggling to get funding (Kei, 2011). Due to scarcity of resources available lecturers are left to improvise the best way to teach without instructional media; resulting in reducing innovative teaching and learning method to a mixed one (Veitia, McCarty, Kelly, Szarek, & Harvey, 2001).

The few instructional media apparatus that are functional are faced with interruptions on electricity line, yet almost all instructional media apparatus use electricity all contractors contracted to install electricity to consider installing them with backups.

### **Lack of Vehicles to Transport Students and their Goods**

Transportation of both students and their goods is faced with shortage of vehicles. Institutions whose programs include COBES face another challenge of funding it when University decides to take students for COBES, which is the time they faced quite a number of challenges such as funds to pay for their expenses, transport, housing, and supervision of students. At times, students have to walk long distances to do their assignments. Housing may not be to the students' standard some lack basic necessities, such as running water and electricity.

### **Results Students**

When students were asked to name the weaknesses of SPICES Model; 58 (23%) of them said that the program is confusing; rarely do we know what is expected of us. Others, 72 (29%) said it demands a lot from the student; while 58 (23%) hold the view that this system gives excuse to the lazy lecturers to avoid going to class to teach in the name of the students doing self-directed learning. Sixty two students (25%) think that tutorials are overcrowded, as per table 1

### **Challenges of SPICES Model as viewed by Lecturers**

Lecturers agree with students that this system creates room for some of them to absent themselves from going to class in the name of students doing self-directed learning 15 (30%). While 25 (38%) of them said that the program needed a lot of resources. Others, 20 (32%) said that the system lacked supervision as a result some lecturers failed to attend classes, as per table 2

Ser.	Responses	Percentage
	<b>Students</b>	
1	It is confusing rarely do we know what is expected from us	23%
2	Demands a lot from the student	29%
3	Creates excuse for lecturers absenteeism that students are doing SDL	23%
4	Overcrowded tutorial groups	25%

**Table 1:** Challenges of SPICES Model as viewed by students

	Responses	
	<b>Lecturers</b>	
1	Creates room for absenteeism among the lecturers	30%
2	Needs a lot of resources	38%
3	Needs a lot of supervision which is lacking	32%
4	As the College ages, which direction is the program taking?	
	More SPICES model	17%
	More lecture method	15%
	More mixed method	66%

**Table 2:** Challenges of SPICES Model as viewed by lecturers

Majority of the lecturers 40 (62 %) said that SPICES Model is not improving with a large number of them 26 (40 %) saying all members of staff should be re-trained on SPICES model of teaching and learning in order to improve it, however some of them 5(8 %) wanted SPICES Model to be abolished. There was no statistical significance between the number of years the lecturers has been teaching and whether SPICES Model was improving or not as the p-Value ( 0.138) this result was not statistically significant at  $p < 0.05$ .

### Conclusions

The main challenges were the inadequate teaching and learning resources and training in SPICES Model of teaching and learning to both staff and students. There is overcrowding in all courses in the College, to mitigate on that, management should consider reducing intake until such a time that new facilities are in place.

### Recommendations

Emanating from the findings of this study, it is recommended that the College management should:

1. Organize annual workshops; separately for both students and lecturers to refresh on SPICES Model of teaching and learning and this will increase acceptability of this program.
2. There is need to increase teaching and learning resources; such as teaching space, laboratories and library; whiteboard, LCD projectors, computers, e-books and internet connectivity and reduce intake until such a time that new facilities are in place.
3. Supervision of lecturers, students and administrators should be intensified by having monthly administrative meetings to receive progress reports on the challenges of teaching and learning and hence solutions would be agreed upon.

4. Further research on performance of the graduates in the job market should be done.
5. Lastly, further research be done on administrators' poor understanding of SPICES Model, whether it affects the services they offer to students.

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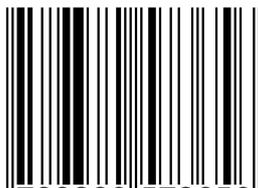


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