

Use of Stimulus Variation Skill in Teaching Health Education

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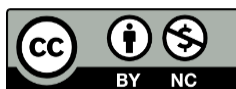
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Abstract

This study has assessed the state of knowledge about stimulus variation skills and practical classroom use among college-level health education teachers. Using a qualitative phenomenological study design, the researchers collected data from health education teachers teaching master's health education in Dolakha, Kathmandu, Bhaktapur, and Chitwan districts. Eighteen health education teachers participated in in-depth qualitative interviews, nineteen teachers' classes were observed, and 4 focus group discussions including 26 teachers were conducted. The qualitative data were analyzed thematically. The results found out from this study demonstrated that there was confusion among teachers whether stimulus variation was a motivational skill or it was a matter of pedagogy. It showed that the participants had a little knowledge of purposeful movement inside the class, effective and appropriate use of gestures, change in speech pattern, interaction style, sense channels, postures and many more stimulus variation skills. Some teachers used intentional movement, and a smaller number of teachers used sensory channel changes and postural changes. In this regard, education college teachers need re-orientations on using all six stimulus variation skills.

Keywords: college, health education, pedagogy, stimulus variation

Introduction

Variations in pedagogical techniques are crucial since students at schools or college tend to become excited if their instructors employ a variety of methodologies. Through stimulus alterations, a talented instructor may make their class engaging and help students feel connected to the course pace; otherwise, the students may feel bored. According to

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Bligh (1998), stimulus variation refers to a variety of strategies and techniques used to capture students' interest in the teaching and learning process. It entails abilities to alter the behavior of teachers, validate the activities that have an impact on students' behavior, influence sensory organs and alter the pattern of sensory organs, alter the pattern of interactions between teachers and students, and validate the interactions between teachers and students (Louis, 1998).

Since, teaching is a set of multiple skills necessary for achieving a certain set of objectives (Aggarwal, 2014), there are several interconnected actions, including philosophical, psychological, social, technological, and pedagogical ones, that have changed the role of the teacher in education (Popkewitz, 2011). Effective teaching approaches have been established as the focus has been shifted from teachers to students as the major figures in the educational process. A re-evaluation of the teacher's position in the classroom has unavoidably resulted from the merging of classroom activities with the fulfillment of actual and tangible learning outcomes. One of the most crucial abilities teachers need to keep pupils engaged on their studies is the ability to vary the stimuli. Teacher preparation is useless if students are not paying attention. For this purpose, therefore, knowledge of this skill and its applied techniques is necessary for every teacher.

Perrott (1988) states the purpose of stimulus-changing abilities as to attract learner's attention by effectively making the content interesting and contextual according to the need, choice and interest of the students. An interesting topic can be boring and tiresome to the students because of its ineffective presentation. Therefore, sustaining attention for as long as possible during the classroom pedagogy requires a large scale of use of stimulus and their change appropriately keeping the students in the center of the educative process (Kumar, 1996). Without them, interests can quickly be faded and proved to be impossible. There are six components of stimulus variation (Allen & Ryan, 1969) which make the instruction interesting and paced when used accordingly.

In Nepal, the teachers who have received educational qualifications and training required for the teaching are called trained teachers. Although they have different degrees and trainings, they are either unable to practice the stimulus in the classroom or do not apply them as their trained talents. According to Karmacharya (2006), the field of pedagogy has been the field of criticism for not effectively applying the stimulus in the classroom.

All the educational institutions in Nepal are expected to make available with professionally competent, self-motivated, and responsible teachers (MoEST, 2019). However, the current trend of the Education College (Teacher training institutions to educate them in pedagogical and curricular norms) shows that producing teachers with inadequate skills of teaching is perceived as a barrier to this aim. The studies conducted in Nepal show that the teachers' behavior in the classroom is direct and textbook centered. The teachers tend to be authoritative and foremost in

nature. In addition, the lecture is their major technique of teaching, with little or no use of instructional materials (Panthi & Belbase, 2017).

As a behavioral science, Health education is taught in the college level for providing health knowledge and for raising health awareness among the students. Some contents prescribed for them are related to their day to day personal and social life and they are easy to conceptualize, while others are difficult and lengthy. Therefore, health teacher should have the well-versed knowledge regarding the contents and they should have the ability to continue lessons in a positive and engaging manner. In this connection, Eisner (2017) opines that how teachers communicate and engage the students in the pedagogy is an important area of research leading to improve the education system. Although Tribhuvan University (TU) health education courses focus on linking knowledge and skills for teaching by using various psychological and educational approaches to leading a class, the real classroom practice is still perceived as less effective. This article aimed to identify the knowledge of stimulus variation skill and its application by the health education teachers in the classrooms of the teachers' training program under TU.

Research Methods

We adopted a qualitative phenomenological approach, covering all of the health education teachers who taught at the Bachelor and Master Levels at TU-affiliated institutions in Bagmati Province, Nepal as the universe. We selected the colleges and teachers from four districts in three geographical regions (Mountain - Dolakha, Hill - Kathmandu and Bhaktapur, and Terai - Chitwan). We conducted four Focus Group Discussions (FGDs), 18 in-depth interviews, and classroom observation from 19 teachers. The focus groups included 26 teachers in total. However, the teachers who were teaching on two or more colleges were included only once as participants in the study.

Similarly, in-depth interview guidelines were used to explore the knowledge on using the skill which included the guiding questions on the skill and its activities as well as how teachers proceed with the class using the six components of stimulus variation. We also used an observation guideline for the class observation of the use of stimulus variation skills. The observation guideline was used as a peer observation form which helped to explore the participant teachers' skill used in the classroom teaching. It found out the competency of stimulus variation used by the trained teachers and it was also observed whether these were effectively demonstrated in the classroom or not while delivering the lesson.

Table 1 demonstrates the details of the participants included in various methods of information collection:

Table 1 *Methods Used for Qualitative Information Collection and the General Characteristics of the Participants*

Characteristics	FGDs (N=26)	IDIs (N=18)	Observations (N=19)
<i>Work setting</i>			
Mountain	-	1	1
Hill	2	8	9
Terai	2	9	9
<i>Age by category</i>			
20-29	-	-	-
30-39	1	1	1
40-49	26	11	12
>=50	6	6	6
<i>Gender</i>			
Male	26	15	16
Female	7	3	3
<i>Duration of job in the present College</i>			
<10 years	4	-	-
10-19 years	26	4	4
20-29 years	3	14	15

In order to determine the precise way in which stimuli are applied in the pedagogy, we also carefully examined the classroom practice using an FGD topic guide. FGDs were held by calling the teachers to a location in the center of each district. The discussion was attended by six to twelve teachers, was facilitated by the principal author, and was documented by the corresponding author. With the participants' permission, the interviews and FGDs were both audio and video-recorded.

Following participant interviews and FGDs, we transcribed the recordings, and then read and reread the transcripts to identify themes. In order to do this, we coded the transcript and then categorized the codes. Finally, the themes were used to group all of the categories. Suitable data sets were used to elaborate on each theme. Because it communicates our opinion or appraisal of a work, it includes subjective writing. Everywhere we could, we included critical reading and critical writing. By providing information, interpretation, and evaluation of the review and analysis in a more thorough manner, we aimed to eliminate superficial thinking (description). It was done using a framework analysis technique (Goldsmith, 2021). The important patterns and thematic cases within the phenomena of interest were found, described, and analyzed. The final aim was often to arrive at generalizable statements by comparing various materials or various texts or several cases (Flick, 2014).

We kept the tools credible by consulting with experts, giving them detailed descriptions, and having members check them. The research committee of the Dean's Office, Faculty of Education, TU assessed the ethical concerns associated with the research process. Participants were informed of the research methodology

and given the go-ahead to participate voluntarily. The necessary data collected from the participants were kept private and anonymous. The right to leave at any point of data collection was granted to participants.

Results

Broadly two themes were framed while analyzing the results in the study: Knowledge of stimulus variation skill among the teachers; and Application of stimulus variation skills in instruction by the teachers. Three sub-themes appeared under the knowledge of stimulus variation skill among the teachers, and two sub-themes appeared under the application of stimulus variation skills in instruction by the teachers. These sub-themes are presented in this article after finding the similar patterns and discussed loosely under the main themes.

Knowledge of Stimulus Variation Skills

Pedagogical knowledge is the teacher's deep understanding of the processes and practices or method of teaching and learning. Having knowledge on the skill of stimulus variation is necessary for the proper execution of this skill later in the classroom. But the sub-themes show a different story about it.

Unknown about the Skill of Stimulus Variation. During the time of interviews, it was found that teachers were doubtful regarding the stimulus variation that could be used as a basic skill for motivating the students in the classroom. Most of the teachers were unknown about it and could not define well. One of the teachers in Bhaktapur opined that it was the technique of bringing varieties to motivate the students. Another two teachers shared their opinions that sharing recent information was the skill of stimulus variation. Another teacher having eighteen years of teaching experience accepted that he was unknown about the use of stimulus variation skills in the classroom. He said, "*I don't know what stimulus variation is; however, I generally use question-answer method to motivate the students toward the study*". Similarly, teachers from Chitwan also could not define it correctly. They all defined it as a motivation style.

Some others said reading the facial expressions of students (under the gestures) is an activity done for stimulus variation. Similarly, another teacher said that questioning and observation, using projectors, etc. can be used for stimulus variation. Several wrong statements were made by the teachers like moving from simpler concepts to complex ones is one of the methods of stimulus variation.

Understanding Stimulus Variation as a Factor of Motivation. FGDs and interviews revealed that the teachers find the skill of stimulus variation as a factor of motivation. A teacher understands the skills of stimulus variations as follows: "*It is the motivation which creates excitement to prepare the students internally while teaching and interpreting the lesson. Preparation is at the beginning of the class*".

A similar level of understanding was found with a teacher in Dolakha. He said:

The students are considered to be the first. If they are inactive, teachers must think about how to make them active. They should be aroused to learn. Without achieving motivation, they wouldn't be mentally ready to learn. Stimulus variation is the skill of teachers to prepare the students physically and mentally ready to read, write, learn and be conscious (a teacher in IDI in Dolakha).

In addition to the meaning of the skill of stimulus variation, we asked them what activities are done under it. Their responses showed that they lacked knowledge of it. They all again said arousing the interest of the students is done under it. Almost all of them again referred to motivation as the activity done under it.

Partial Understanding of the Six Skills of Stimulus Variation. Although many of the teachers could not define the skill, after many similar responses, a teacher came close to the appropriate answer but could not list out the activities under it. She said,

Varieties of activities can be done to motivate the students because the same thing cannot always trigger the attention of the students." Contrary to these wrong understandings, two teachers from Bhaktapur understood it correctly. One of the participants said, "Stimulus variation includes facial expression, body movement, etc." Likewise, another one said, "For it, meaningful gesture, speech change, body movement, face-to-face activity, role-playing can also be employed.

Thus, we found that the health education teachers at the college level in Nepal generally understand the skill of stimulus variation as a 'motivational technique'. These are used to bring variations inside classrooms for effective teaching-learning. It binds students to the learning process and makes them attentive. However, none of the health education teachers in the Education Colleges of Nepal themselves know about various skills of stimulus variation. A low level of understanding of this skill may lead to low practice inside the classroom.

Application of Stimulus Variation Skills in Instruction. The 'K-A-P' formula (Green & Tones, 2010) encapsulates the linear link between knowledge, attitude, and practice with reference to everything. Although it claims that knowledge does not cause conduct on its own, it is nonetheless always important. As stated further by Green and Tones (2010), "The provision of knowledge has to be supplemented by the persuasive techniques designed to bring about a change in attitudes before the target person will adopt appropriate practices" (p. 118). However, the appropriate practice cannot be anticipated to occur if the information is lacking at the beginning.

According to Allen and Ryan, various components like purposeful movement, meaningful gestures, change in speech pattern, change in interaction styles, change in the sense channels, and change in posture are the skills to be used for stimulus variation (1969). These skills are important to arouse the interest among the

students, to hold the attention of the class and sustain students' interest and to engage them in the pedagogy. It was asked to the teachers how they bring variations in stimulus to continuously motivate students inside the classroom.

Methods Used in the Skill of Stimulus Variation. Although there are six well-known skills under stimulus variation, the teachers in this study were found using physical gestures, movement, changes in voice, face-to-face interaction, and role-playing for it. One of the teachers in Chitwan said, "*As per the requirement, I even dance to reach the variation in stimulation.*" He further said that he sometimes spoke softly and sometimes loudly and conducted the class moving from one corner to other.

One of the teachers from Dolakha gave a rationale for using this skill inside the classroom and described how he used it in the classroom as follows:

Different students have different types of levels; they do not have equal habits and capacity for learning. Their ways of being happier also differ. Some are attracted to timely events, and some arouse interest when they are given the opportunity by launching different questions. Applying all these stimulus variations is achieved for successful motivation. To make the teaching effective, first, attracting students and focusing on the subject matter is considered to be headed by the center, providing topics for discussion related to the same topics. Students are made to present by already distributing the topics so that learning through their effort and presentation becomes more effective than learning through the teacher's teaching. Knowledge becomes effective when it is self-sought (a teacher in Dolakha).

Besides these two teachers, others were unable to respond properly to the question "how do you bring variations in stimulus to continuously motivate students inside the classroom?" Many of them said they used meaningful gestures, change of sense channels, etc. inside the classroom but could not say what exactly they used to do under it.

No Use of All Six Skills of Stimulus Variation. In the observation of a teacher in Bhaktapur, it was found her not have any movements inside the classroom, not showing any meaningful gestures, and teaching continuously following a one-way tract. She neither changed her posture nor stimulated the students for reading in any way. It was astonishing to find a young teacher (teaching assistant) in the same district similarly leading the class. He also stayed in one position and did not have any eye contact with the students. However, he fluently delivered the speech, without paying attention to the students whether they were listening to him with attention or not.

But the teachers of Kathmandu and Chitwan demonstrated better skills of stimulus variation in comparison to Bhaktapur. It was observed that a teacher in Kathmandu moved inside the class to and front, moved his hands in the air to demonstrate what he said, and tried to motivate the students with changes in speech patterns. Although he did not change in interaction styles, sense channels,

and postures, he was able to bind the students with his purposeful movement and meaningful gestures. While a few teachers in Chitwan used all the skills of stimulus variation, others in Kathmandu and Chitwan mostly used the skill of purposeful movement. However, one of the teachers in Kathmandu was found almost running inside the classroom. It was realized that he was deliberately trying to show the skill to the researcher. In doing so, he was making a speedy movement to and front, side by side, and even round to round in front.

In FGDs, no any teacher specifically included any statement about their way of using this skill inside classrooms. They just randomly said they used the skill of changing speech patterns and voices, gestures as well as movement. However, they did not describe anything what they exactly do to perform these skills. In addition, one of them included a negative approach to holding onto the so-called attention of the students:

I carry on my class in a dictator way. What I say must be done by them. I do not use varying techniques but compel them to read and write. Our students must be forced to study otherwise they do not pay attention to their studies (a teacher in FGD in Kathmandu).

Although two teachers during the discussion opposed this approach of proceeding with the course, they also reflected no innovative method of bringing variations in stimulus among students. Teachers using some of the skills of stimulus variation were also found. The most favored was purposeful movement and the least used or non-used were the change in sense channels and the change in postures.

All the teachers did not demonstrate the six skills of stimulus variation in the observation classes nor described them well in the FGDs. Teachers' level of understanding of this skill was not found adequate; however, the practice was found comparatively better among the teachers of Kathmandu and Chitwan. Teachers in Bhaktapur demonstrated lower understanding as well as inadequate classroom performance.

Discussion

The knowledge and application of the six skills of stimulus variations in the teachers of health education at the college level were tried to explore in this study. Under the theme 'knowledge of stimulus variation skill', we found teachers without knowledge about this skill, understanding this skill as a factor of motivation, and expressing a partial understanding about the six skills under stimulus variation. Similarly, under the theme 'application of the stimulus variation skill in instruction', we found a few methods only used in the skill, and no use of all the six skills of stimulus variation.

The process of a teacher moving with a planned and specific purpose, such as moving towards the chalkboard to write a new word, drawing a diagram,

approaching a student to look at his or her work, moving to the table to conduct an experiment, etc., is known as purposeful movement (Allen & Ryan, 1969). However, making pointless movements like wandering the entire length of the classroom or approaching the students without a reason is avoidable.

Utilizing hand gestures and facial expressions in meaningful ways is another skill. If employed correctly, at the right moment, and in the right setting, some of these nonverbal communication patterns can be highly powerful. The intensity, pitch, and speed of speech can be modified to represent various types of ideas through changes in speech patterns (Allen & Ryan, 1969). Additionally, this prevents classroom boredom.

Similar to this, maintaining interest can be achieved by altering the teacher's interactional style (Allen & Ryan, 1969). When compared to a lecture class, the change can be between teacher and group interaction and teacher-student interaction (questioning) or student-student interaction (discussion). A shift in the sensory channels (Allen & Ryan, 1969) is another crucial ability. The teacher is not limited to their use of sight or hearing. To shift students' perception from audio to oral-visual or visual, a manual task might be introduced, as well as images, charts, and other visual materials. Last but not least, teachers can also stress a point by bending and leaning forward while changing their posture from standing to sitting or from sitting to standing. Dramatization, however, is to be avoided wherever possible.

In order to attract the attention of the learners to what is being taught and keep it there, the teacher must practice the art of stimulus variation (Maheshwari & Bansal, 2011). Variation is the strategy of switching up these stimuli to add diversity to the classroom to avoid boredom. An agent, a behavior, or a situation that stimulates a physiological or psychological action, activity, or response is referred to as a stimulus (Warren, 2018).

Supporting this fact, behaviorism focuses on the importance of the environment in learning, and indicates that proper stimuli need to be provided to strengthen students' learning. Teachers, therefore, should have a repertoire of knowledge about a chunk of stimuli to apply them as per the individual learning needs of the learners. This skill is focused on altering or shifting the instructional styles to prevent monotony. The theory of generalization also believes that familiar stimuli encourage students to learn newly introduced contents in health education; teachers therefore, need to focus on applying alternative instructional materials to foster the intellectual abilities of the students to the fuller extent possible.

Skills encourage students to participate more actively in class and to approach learning with passion. It improves learning for kids by assisting with attention span. One of the most potent influences on keeping students engaged in their orienting activity is a stimulus condition that changes in various ways. According to Ambrose

et al. (2010), a teacher needs to improve the ability to capture and maintain students' attention during the course of instruction.

The ability of stimulus variation entails drawing and maintaining students' attention by altering environmental stimuli. Students get more engaged in their learning as a result of the variety in the stimuli, which enhances their academic performance. In order to grab students' attention to what is being taught and keep it there, the teacher must practice the art of stimulus variation (Maheshwari & Bansal, 2011). Sudden or drastic shifts in tone, volume, or pace of verbal presentation are used by teachers to convey emotions or to emphasize a particular subject. The students become more attentive and engaged in the lecture as a result of the change in speech style (Mhaske, 2016).

By getting students physically engaged with something, the teacher can shift the students' attention to something else. They may involve them in dramatizations, manipulation of equipment, or experiments. They are able to keep their attention on the teaching-learning process by doing this (Ambrose et al., 2010). A resourceful teacher must learn how to keep students' attention throughout the lesson by drawing them in and keeping them there. They ought to purposefully alter their attention-grabbing actions in class.

Conclusion and Implication

In Nepali colleges, there is a clear deficiency in the knowledge and practical application of stimulus variation among health education teachers. Although some activities were seen, health education teachers generally do not practice it very well. Purposeful movement and meaningful gestures are what most Nepalese health education teachers do for stimulus variation. Many of the teachers still practice the traditional ways of teaching standing at a place and finish the class, while a few teachers can bind students with their purposeful movements and meaningful gestures. In comparison to the knowledge of stimulus variation, teachers practice this skill to some extent. However, change in sense channels and change in postures is not practiced at all. But Thorndike, a renowned behaviorist, contents that teachers should encourage students to practice the behavior once learned in the classroom to make it sustainable. Teachers, therefore, should provide ample opportunities to practice the behaviors intended by the curriculum.

Students rarely pay attention to the same item continually in class. One finds it exceedingly challenging to focus on one stimulus for more than a few minutes, or occasionally just a few seconds or even fewer. Therefore, it is essential to change the stimuli in order to capture and maintain the student's attention on the lesson. This is so because learning requires attention, which is a precondition. In this regard, the theory of generalization depicts that different forms of stimulus provided to health education students enhance the concomitant improvement in their learning.

Therefore, it is evident that the proper use of stimulus maximizes the student's learning.

Either the teaching methods utilized there are more subject focused than the pedagogical implications for the health education curricula at the master's and bachelor's levels at TU are more content-oriented than pedagogical. This is resulting in future teachers having fewer teaching abilities, such as the ability to vary the stimuli. A successful educator must possess the necessary abilities to offer a range of educational opportunities. The focus of the curriculum must be on the guidelines for health education. Additionally, the Collegees ought to provide appropriate opportunities for developing these abilities while aspiring teachers are taking courses.

In order for future educators to properly comprehend the foundations of instruction, the TU teacher education program needs to upgrade its course materials and teaching methods. To maintain the pupils' interest in and attention toward the instruction, this skill of stimulus variation entails using a variety of attention-getting behavioral patterns. College teachers are supposed to apply the six components of this skill to make the class attractive and hold the attention of the students.

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Conflict of Interest

The authors declare that there are no conflicts of interest with this study.

Author Contributions

KRS conceptualized and carried out the study; KRS and BA created the draft; BA helped with the fieldwork and participated in the editing process and also carried the corresponding author's role; and RKM supervised the study and edited the final product.

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