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Level of Self-Efficacy of Science Teachers Towards Engaging Students

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Abstract

The study aimed at investigating the level of self-efficacy of science teachers towards student engagement. Although the general self-efficacy of teachers has been explored a lot but the efficacy of science teacher has not been explored more and student engagement is crucial towards understanding of science concepts. Therefore, the main purpose of the study was to find the self-efficacy of science teachers mainly towards three dimensions of student engagement (Behavioral, Cognitive and Emotional engagement). The study was carried with 150 secondary science teachers as Kathmandu. Secondary science teachers were found to be moderately high efficacious in all aspects of behavioral engagement of students except four aspects in which they showed moderate efficacy. Regarding the self-efficacy on cognitive engagement they were moderately efficacious in two aspects and were found to be moderately high efficacious in other all aspects. However, science teachers' self-efficacy was found to be moderately high. Teachers were found to be efficacious in making classroom constructive, developing collaborative skill and high order thinking among the students. However in some aspects they were found less efficacious.

Key words: *Teachers' self-efficacy, Behavioral eagement, Cognitive eagement, Emotional enagement*

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I . Introduction

Teachers' self-efficacy is connected to their beliefs upon their own ability to accomplish a given task successfully by performing required actions (Bandura, 1977; Zusho, Pintrich, & Coppala, 2003, as cited in Yesilyurt, 2014). The teachers with higher self-efficacy are expected to encompass a productive classroom set, hold up students' feelings, and deal with students' wants (Schunk, 2012). Short of self-efficacy faith in teachers can have pessimistic outcome to students' learning. The teachers with low self-efficacy may not have capacity to plan or systematize their instruction materials. Teachers' self-efficacy as instructional efficacy refers to the personal viewpoint about one's competence to assist students' learning. Bandura (1997) projected four sources of self-efficacy: mastery experience, vicarious experience, social persuasions, and physiological and affective states.

Mastery experience, denotes to the clarifications that persons make of their earlier performances. Bandura theorized that interpretations of previous enactment assist as a strong gauge of self-efficacy, a result that has been established in studies of the sources of individuals' self-efficacy (Usher & Pajares, 2008). Proficient models deal with enhanced ways of handling instruction circumstances. Prior studies suggests that the beginner teachers who have higher levels of induction support compared to those with lower levels of support are more probable to view their professions as manageable, report that they can instruct the most challenging or difficult students, and indicate that they are successful in providing education to students needing special education services (Billingsley et al., 2004). Similarly, according to Bandura (1997) "people can develop high or low efficacy vicariously through other people's performances. A person can watch another perform better and then compare their own competence" (p. 32).

The social or verbal persuasions, denotes to the influential messages individuals receive from others. Self-efficacy is influenced by inspiration and dissuasion relating to an individual's capability to perform (Redmond, 2010). Teachers receive evaluative reaction from students, other teachers, administrators, and parents, which are likely to impact the way they feel about their ability in their jobs. Encouraging communications naturally increase self-efficacy, whereas criticisms tend to be declining the self-efficacy (Billingsley & Cross, 1992). Similarly, studies have shown that teachers who remain in their jobs were about four times more likely to notice their managers or principal as helpful and inspiring than they were the teachers who give up their teaching profession (Boe, Barkanic, & Leow, 1999).

Physiological states, denotes to persons' somatic and affective responses concerning their performance. People feel sensation from their body and how they perceive this emotional arouses influences beliefs of efficacy (Bandura 1997). Teacher may feel that they do not have acquired skill for carrying out their professions due to excessive stress and anxiety, whereas teachers who feel energized by the instruction mission probably approach their work with self-assurance (Ruble, Usher & McGrew, 2011).

Instructional self-efficacy is thought to influence the teachers' proceedings, effort, and willpower with learners (Ashton & Webb, 1986). This implies that the learners learn effectively if the instructors trust in their own ability to get better learning of the students. Teacher efficacy is also primary to what is telling as planned teacher (Slavin, 2006). Higher teacher efficacy has been connected with higher level of accountability for their profession. The teachers who are exceptionally efficacious are successful in their job and the efficient teachers widen students' learning. In this sense, the teachers' self-efficacy is considered as a forecaster of learners' attainment.

From the above discussion, it can be understood that teachers' belief on their efficacy has an effect on student learning and is also associated with the quality of teaching and learning. From the theories above, it can be concluded that shaping the behavior and creating the proper environment helps students' learning. Social and contextual setting and instructor with academic knowledge applied in the classroom is influenced by teachers' level of self-efficacy as well as social and contextual setting. Teachers with faith on themselves that their activities can influence student's behavior and learning have high efficacy than those who do not have faith upon themselves that they are effective in their profession. These theories help to construct foundation for teachers to develop efficacy belief and are helpful for self-efficacy of teachers and the research related to teacher efficacy.

Self-efficacy of science teachers has not been explored. Science is a subject which requires conceptual understanding rather than memorizing the facts. In such scenario teacher must be efficacious about dealing with science students. Besides this in order to gain conceptual understanding teachers must be well aware about the student engagement. Therefore, It is essential to explore the level of efficacy of science teacher towards engaging students in learning.

Conceptualizing Teacher Efficacy and Student Engagement

1. Conceptualizing Student Engagement

Marks (2000) views that student engagement in pedagogical practices is a psychological process in which students need to have "attention, interest, investment, and effort students expend in the work of learning" (p. 155). The engaged learning has recently become a paramount concern in the classroom pedagogical practices. In engaged learning, the learners have to invest considerable amount of effort on the task of learning. Bedell (2013), highlights behavioral, cognitive and emotional aspects of students as important factors of student's engagement. Engaged students are enthusiastic, interested and are excited to learn. They endure through complicated responsibilities and they take pleasure in their actions. They are drawn in learning as it is interesting, rather than merely doing the work so that they can move on (Bedell, 2012). She further added that, engagement is additional to just listening, behaving, and being on task.

The student engagement promotes desirable quality in classroom teaching and learning. Nevertheless, it creates harmony between students and teachers (Farmer & McKinney, n.d.). It also refers to a student's eagerness, wish, need and force to involve in, and do well in the learning course of action (Bomia et al., 1997, as cited in Farmer & McKinney, n.d.). "Student engagement is used to make conversation about students thinking towards school, whereas student disconnection identifies moving back from school in any major way" (Willamms, 2003, p. 10).

Student engagement has the greatest value for generating positive results of learning (Sinatra, Heddy, & Lombardi, 2015). Various researchers have highlighted that learners who are engaged are expected to reflect constructive results (Bulger, Mayer, Almeroth, & Blau, 2008; Wilms, Friesen, & Milton, 2009). The student engagement is envisioned on the idea that learning advances once the learners are curious, engrossed, or motivated. However, learners are disengaged when learning turns to uninteresting and unemotional. Superior or better student engagement is considered to be common pedagogical objectives of teachers (Hidden Curriculum, 2014). The factors like scholarly, affecting, behavioral, physical, and societal factors play important role in the learning process and social development while conceptualizing the role of student engagement in the context of education. Teachers who influence students to learn are viewed as having teaching efficacy beliefs, that is, they believe in their abilities to produce preferred student learning (Tschannen-Moran & Woolfolk Hoy, 2000, as cited in Dibapile, 2012). Student engagement is viewed as the competence of

the teachers to support students to learn.

Additionally, Fredericks, Blumenfeld, and Paris (2004) classified studies of engagement into three categories: behavioral, emotional and cognitive engagement. Behavioral engagement involves attempting and following the regulations; emotional engagement includes morals, interest, and emotions; and cognitive engagement includes inspiration, effort and plan. Classroom organization can be conceptualized in best way by the above mentioned three classification. Teachers' belief of efficacy in line with the students' engagement suggests that self-assurance of a person can help students to raise and remain anxious, invested or inspired for learning (Dibapile, 2012).

Fredericks, Blumenfeld, and Paris, (2004) classified student engagement into three categories: behavioral, emotional and cognitive. For them, "behavioral engagement encompasses doing work, and following the rules; emotional engagement includes interest, values, and emotions; and cognitive engagement incorporates motivation, effort and strategy use" (p. 65). These categories are helpful in understanding student engagement.

1) Behavioral Engagement

Behavioral engagement is experienced when pupils appear into the classroom, talk about what they are learning, and retain trying when the work is tough. "These students are taking notes, doing homework, listening carefully, posing questions, participating in small groups, and helping others. What happens when the teacher stops talking? Do students continue the conversation among themselves, moving toward the desired learning outcome?". Behavioral engagement in primary elementary grades expects future achievement on test scores, grades, and the decision to drop out of high school (Bedell, 2013). Behavioral engagement is based on one's immersion into the academic, social, and extracurricular progressions of school (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement can be defined as specific pupil behaviors connected with learning, such as focusing, employing effort, captivating initiative, being determined despite of failure, following directions and positively interacting with instructors and peers among others (Hattie & Anderman, 2013). Research indicates that students' behavioral engagement is likely to lead to greater academic achievement and school retention (Hattie & Anderman, 2013).

2) Cognitive Engagement

Cognitive engagement reflects about a student's investment in learning. Learners who are cognitively engaged establish learning goals, self-regulate their own behavior, and wish to go beyond the lowest necessities (Bedell, 2013). Fredricks et al. (2004) defined cognitive engagement as the aspect of engagement, which is based on pupil investment in school and the progressions of education. A cognitively engaged learner is considerate, planned, and eager to exercise the essential energy for understanding of complex concepts or mastery of problematic skills (Christenson, Reschly, & Wylie, 2012). The research on cognitive engagement is often concerned with how much students invest in learning and whether they are willing to work extra to get better academic outcomes.

3) Emotional Engagement

Emotional engagement replicates a pupil's satisfaction of and sense of belongingness to an educational institution. It is established by making associations and sensation of success at school. Once learners enjoy a subject, they are expected to value it in its own precise and follow further learning on their own. A helpful student-teacher relationship is a key source of students' emotional engagement. Strong emotional engagement in school may be associated to suppleness during stress (Bedell, 2013). Emotional engagement defined as an engagement based on how learners identify with their educational institution (Fredricks et al. 2004). Identification with the educational institutions comprises belonging, valuing, or a feeling of being important to the school, as well as gratitude of success in school-related outcomes (Christenson et al., 2012). Emotional engagement of students focuses on the degree of positive and/or adverse responses to instructors, contemporaries and peers, and school in general (Devito, 2016). Positive emotional engagement contributes to pupil bonds to school or other educational institution and stimulus readiness of pupils to study and take part in other school-associated actions.

2. Teacher Efficacy and Students Engagement

Student engagement is related to teacher self-efficacy as the study has found that teacher self-efficacy has an influence on their “performance, commitment, and professional retention”

(Ware & Kitsantas, p. 303). Self-efficacious teachers are regarded as having the capability to establish appropriate actions and to demonstrate tolerance with students who are struggling. So, teachers will demonstrate better performance and help student to engage in learning. Likewise, according to teachers with high self-efficacy keep students on task (Erawan, 2010). Schunk (2012) explains teacher self-efficacy as instructional self-efficacy, mentioning to individual beliefs about one's ability to support students learn and engage in required task. Teachers with high self-efficacy not criticize more about the errors of their students' but offer additional time to support struggling students, and remain to display attention in all students' education (Ho & Hau, 2004). Teachers with high self-efficacy are also proactively thoughtful in terms of students' needs in the educational setting. (Cheung, 2008). Highly efficacious teachers engage students in learning and use numerous instructional means to control disagreeable classroom conduct.

Teachers who feel efficacious about their ability on performing task are much more likely to try hard, continue, and pursue help in an adaptive mode whereas, those who are not self-assured of their abilities are much less likely to try hard and more likely to leave easily at the first sign of difficulty or try to get help that completes the task without helping them learn or master the task (Bandura, 1997; Pintrich & Schunk, 1996). Teachers with self-efficacy belief are well aware about the involvement of students' classrooms actions and activities. Teachers with self-efficacy are able to create classroom climate so as students are better engaged in academic task by having concentration, attention, effort and role in classroom discussions. Teachers who supposed that they are capable of doing the mission were much more likely to engage students' cognitively than those who had lower self-efficacy beliefs. Moreover, high self-efficacy beliefs were related to increasing the students of deeper processing strategies such as elaboration and organizational strategies as well as meta-cognitive strategies over time. Teachers with self-efficacy belief are more likely to plan, monitor, and regulate themselves while working with their tasks (Linnenbrink & Pintrich, 2003).

The cognitive component of students' engagement involves self-regulated learning, metacognition, application of learning strategies, and "being strategic" in thinking and studying. (Lester, 2013). Teachers may create classroom practices, use consistent indications, or allocate pupils roles that foster behaviors more helpful to learning. They may also establish consistent routines that help students stay on task or remain engaged during a class. For example, the class may regularly break up into small groups or move their seats

into a circle for a group discussion, or the teacher may ask students on a rotating basis to lead certain activities. By introducing variation into a classroom routine, teachers can reduce the monotony and potential disengagement that may occur when students sit in the same seat, doing similar tasks, for extended periods of time (Linnenbrink & Pintrich, 2003).

The main elements of emotional engagement includes students' affective reactions, emotional reactions, and school identification. Affective reactions include their interest, boredom, anxiety, sadness, and happiness. Emotional reactions involves the positive or negative feelings toward the institute and teachers. School identification pertains to students' feelings of belonging and importance within the institutional environment (Lester, 2013). So, teacher with self-efficacy belief shows emotional attachment to the students which help them to feel belongingness and positively towards school task. Teachers may apply variation in strategies to develop positive emotions in learners that will enable the learning process and lessen negative behaviors. For example, classrooms may be reshaped to make them more conducive to learning, teachers may make a point of one-to-one care of pupil moods and asking them how they are feeling, or school programs may provide counseling, peer mentoring, or other services that generally seek to give students the care they require to get ahead academically and feel positive, optimistic, or enthusiastic about school and learning. Teachers with self-efficacy belief prepare strategies for building stronger relationships between students and teacher in real classroom environment (Linnenbrink & Pintrich, 2003).

II. Methods

The philosophy of this study is based on post positive paradigm. Survey design was used for the study as Creswell (2014) defines survey research design is one of the quantitative research designs that studies numeric leanings of opinion, intentions and attitudes from a sample out of its population. The purpose of selecting quantitative research design in my study is to find out the level of efficacy of Science teachers in engaged learning of the students. The rational of using quantitative approach in my study is for the generalization for the issues of science teachers' efficacy in terms of student engagement. Piloting of questionnaire was done with 15 secondary school science teachers of community school in Kathmandu district . Yamane (1967) formula was used to calculate sample size. The final

sample size of the study was 150 secondary science teachers teaching at community schools of Kathmandu district. The instrument (Questionnaire) was prepared by extensive review of literature (Bedell, 2013; Dibapile, 2012; Marzano, 2013; Nicholas-Pino, 2015; Science Teacher Efficacy Belief instrument prepared by Riggs and Enochs, 1990, Teachers' Sense of Efficacy Scale prepared by Anita Woolfolk Hoy, and Teacher Sense of Efficacy Scale prepared by Tschannen-Moran and Hoy, 2001). The self-efficacy of science teachers on student engagement was measured with the help of five point Likert scales which identifies the different levels. The value of Cronbach's Alpha of all values of self-efficacy were above 0.9, the instrument to measure self-efficacy was considered reliable [(Cronbach's alpha (α) = 0.70 test in SPSS was tested (Division of Statistics + Scientific Computation, 2012). Necessary correction was done according to the suggestion of my research guide and research experts in order to maintain validity of the study. The Statistical Package for the Social Science-18 (SPSS18) was used to analyze the data obtained from survey. Finally, the ethical consideration of the study was explained, which I followed while conducting this survey research.

III. Result

This study includes three constructs of efficacy (behavioral engagement, cognitive engagement and emotional engagement) of science teacher in student engagement. The self-efficacy of science teacher on three dimensions of student engagement was measured by the help of questionnaire prepared according to areas of above dimensions of students' engagement in learning activities. The constructs were further classified in various dimensions. The efficacy construct of behavioral engagement consisted of nine dimensions, cognitive engagement consisted of ten dimensions and the emotional engagement consisted of eleven dimensions. The efficacy level teachers on each dimension was explored and discussed as below:

Secondary School Science Teachers' Level of Efficacy on Behavioral Engagement

This part of the study explored the efficacy level of Science teachers on various dimensions of behavioral engagement of students. There were nine dimensions of behavioral engagement of students. The dimensions of behavioral engagement were related to classroom,

understanding of concept, conducting practical activities, collaboration, posing questions to students, use of web in teaching learning process, assigning challenge questions dealing with struggling students and dealing with girls' problem. The efficacy dimensions of behavioral engagement are given in Table 1 with their mean and standard deviation value.

<Table 1> Level of Efficacy on Behavioral Engagement

Efficacy Dimensions (Behavioral Engagement)	N	Mean	S.D.	Level
Make Classroom meaningful to students	150	3.75	0.82	MH
Ask students to demonstrate their understanding	150	3.34	0.87	M
Carry out Practical activities to develop concept of science	150	3.32	0.82	M
Instruct to work in collaboration	150	3.52	0.90	MH
Pose questions to students and ask about learning	150	3.51	1.00	MH
Use of web in dealing with difficulties of students	150	3.09	1.11	M
Assign challenge questions to students	150	3.34	0.88	M
Deal with struggling students	150	3.98	0.73	MH
Deal with girls students who are struggling	150	3.64	0.86	MH
Valid N (list wise)	150	3.50	0.52	MH

The study aimed to examine the level of science teachers' efficacy on behavioral engagement of students. Nine dimensions of behavioral engagement of students were analyzed by calculating their mean and standard deviation. The above table illustrates the mean and standard score of various dimensions of efficacy of teachers on behavioral engagement. The mean score (3.98) of the efficacy on dealing with struggling students is found to be higher while the mean score (3.09) of the efficacy on using of web in dealing with difficult students was found to be the lowest. Similarly, there were higher deviation (SD =1.11) from mean scores of efficacy on using web in dealing with difficult students, which was followed by (SD=1.00) efficacy on posing questionings to students and ask about their learning.

The science teachers' efficacy in all the components of behavioral engagement are in similar range that shows the higher level of representativeness of the mean. There is less fluctuation of responses of teacher's efficacy on components of behavioral engagement. Therefore, the efficacy of students on dimensions of behavioral engagement depicts that efficacy in five components was moderately high level and remaining three components showed moderate level efficacy.

Science Teacher's Efficacy by Cognitive Engagement

The level of efficacy of science teachers was explored in terms of the various dimensions of cognitive engagement of students.

<Table 2> Level of Efficacy on Cognitive Engagement

Efficacy Dimensions (cognitive Engagement)	N	Mean	S.D.	Level
Ignite students interest and curiosity	150	3.90	0.73	MH
Develop problem solving skills or develop high order thinking	150	3.50	0.80	MH
Create environment for students to set their goals and self-regulate their behavior	150	3.63	0.78	MH
Increase interest of girl students	150	3.61	0.92	MH
Involvement of student learning concept by using web	150	3.06	1.02	M
Involve students to link various concepts to draw new meaning	150	3.44	0.89	MH
Making girls compulsion for their involvement in gaining concept	150	3.40	0.89	MH
Help student to work by scientific method or principle	150	3.36	0.77	M
Involve students in observation and encourage them to draw conclusion	150	3.43	0.93	MH
Carry out activities that increase higher level of thinking of students	150	3.63	0.84	MH
Valid N (list wise)	150	3.49	0.57	MH

(M=Moderate, MH= Moderately High)

Table 5, highlights the mean, standard deviation score and level of efficacy of teachers on various dimensions of cognitive engagement of students. The mean score (3.90) of the efficacy on igniting students' interests was found to be higher while the mean score (3.06) of the efficacy on involvement of students learning concept by using web was found to be the lowest. Similarly, there was higher deviation (SD =1.02) from mean scores of efficacy on involvement of students learning concept by using web, which was followed by (SD=0.73) efficacy on igniting students' interests.

There was less fluctuation of responses of teacher's efficacy on components of students' cognitive engagement. The science teachers' efficacy in all the components of cognitive engagement are in similar range that shows the higher level of representativeness of the mean. The study revealed that the level of Science teachers' efficacy on eight components of their cognitive engagement was found to be moderately high and moderate in rest of the components.

Science Teacher's Efficacy on Emotional Engagement

The level of science teachers' efficacy was determined in terms of eleven dimensions of emotional engagement of students. Teachers showed low efficacy in helping the students to work with scientific method principle, which is most important element for student to gain conceptual understanding of science topics.

<Table 3> Level of Efficacy on Emotional Engagement

Efficacy Dimensions (Emotional Engagement)	N	Mean	S.D.	Level
Make classroom climate for students to celebrate their success	150	4.02	0.69	MH
Make students enjoy in science classroom instruction	150	3.99	0.74	MH
Build up psychological effect towards classroom climate	150	3.74	0.74	MH
Develop student's sense of belongingness	150	3.90	0.68	MH
Make strong relationship with students	150	3.88	0.78	MH
Develop faith on teaching	150	4.06	0.71	MH
Address Students perspective of learning	150	3.73	0.70	MH
Reduce stress and anxiety of students	150	3.80	0.65	MH
Make students feel positive, optimistic or excited about learning	150	3.90	0.75	MH
Monitor students mood and provide counseling accordingly	150	3.67	0.81	MH
Monitor and deal stress related to girls	150	3.56	0.80	MH
Valid N (list wise)	150	3.87	0.45	MH

As shown in Table 3 the mean and standard deviation score of science teachers' efficacy were explored in terms of various dimensions of emotional engagement of students. The mean score (4.06) of the efficacy on developing faith on science teaching among students was found to be highest while the mean score (3.56) of the efficacy on monitoring girls' students and dealing with their stress was found to be the lowest. Similarly, there was higher deviation (SD 0.81) from mean scores of efficacy on Monitoring students' mood and providing them with counseling services accordingly, which was followed by efficacy on monitoring girls' students and dealing with their stress (SD=0.80).

The similar range of mean of science teachers' efficacy shows the higher level of representativeness with less fluctuation of responses of teacher's efficacy on components of emotional engagement. Moderately, high level of efficacy of science teachers on all components of students' emotional engagement was observed from the study.

Science Teachers Efficacy on Student Engagement

Science teachers' efficacy was explored on the basis of three constructs: behavioral, cognitive and emotion engagement. The analysis of the data collected from science teachers has been presented in this section. The science teacher efficacy has been presented in terms of behavioral, cognitive and emotional engagement of students.

Relations of Science Teacher Efficacy Between Three Constructs of Students' Engagement

The association of descriptive and inferential statistical analysis was considered with the data. Such analysis gave two types of information. First, it gave the direction of relationship among any two variables, positive or negative. Second, it gave the strength of association: strong or weak or moderate. The value of coefficient always ranges from +1 to -1. The coefficient nearer to +1 or -1 indicates the stronger relation while nearer to 0 indicates the weaker relation. When both the variables are measured in scale, the Pearson correlation coefficient is the appropriate measure (Pant, 2011).

The study focused on identifying whether there is association between the three constructs of efficacy. Pearson correlation was calculated by the help of SPSS tool to measure the association between the constructs of efficacy which is given in Table 4.

<Table 4> Correlation of Science Teachers' Efficacy Between Three Dimensions of Student Engagement

Efficacy Constructs		Behavioral engagement	Cognitive engagement	Emotional engagement
Behavioral Engagement	Pearson Correlation	1	.672**	.559**
	Sig. (2-tailed)		.000	.000
	N	150	150	150
Cognitive Engagement	Pearson Correlation	.672**	1	.701**
	Sig. (2-tailed)	.000		.000
	N	150	150	150
Emotional Engagement	Pearson Correlation	.559**	.701**	1
	Sig. (2-tailed)	.000	.000	
	N	150	150	150

** . Correlation is significant at the 0.01 level(2-tailed).

The table revealed that there is positive correlation between the constructs of efficacy. The

correlation between all three construct of efficacy was significant as the value of correlation coefficient was 0.00 in all aspects of association which was less than 0.01. The correlation coefficient between efficacy on behavioral engagement and cognitive engagement was found to be 0.672, which means that there is a positive correlation between these two constructs. The value of correlation coefficient between efficacy on behavioral and emotional engagement was 0.559, which indicates positive correlation between them. The third correlation coefficient value between cognitive and emotional engagement was highest (0.70), which also highlights that there is positively high correlation between the two constructs of efficacy.

IV. Conclusion and Implication

Science teachers are in attempt of promoting the constructivist approaches of science teaching. For example, instruct for collaboration, making classroom meaningful to students and dealing with struggling students. Secondary were efficacious towards developing interest and curiosity of students, developing high order thinking skill, involving draw conclusion from observation and linking various concepts of science to draw new meaning. Teachers were less efficacious in terms of using web, demonstrating activities for concept development, assigning challenge questions and helping students to work in scientific method principle. Self-efficacy of science teachers towards emotional engagement were better than that of behavioral and cognitive engagement as science teachers showed moderately high efficacy level in all aspects of emotional engagement of students. However, the contextual approaches of learning respecting the needs and prior knowledge of students seems to have superseded by the ways of traditional approaches of teacher centered teaching and learning activities.

The science teachers' efficacy is not only the factor that determines the students' engagement but also a crucial component for the meaningful engagement of students in learning science. The science teachers' efficacy can be better translated in the practice inside the classroom contexts while bringing conducive learning environment. Professional growth training could help teachers to increase their self-efficacy on science teaching as well as towards proper student engagement. Science teachers should have appropriate training about dealing the science topics with scientific method principle which will help to develop science concept among the students. The study was carried to a specific region with limited sample,

implementing this study to larger sample may provide some more depth understanding of teacher's self-efficacy on aspects of student engagement. Including demographic aspects in the study would provide more understanding about level of efficacy of science teachers. The mixed method study can give more contextual understanding on science teachers self-efficacy towards engaging students.

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