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Investigating the Elements of Teaching Related to Connectedness that Improve the Quality of Teaching and Enhance Students Learning Outcomes

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***Abstract*:** This study was conducted to investigate the elements of teaching related to connectedness that improve the quality of teaching and enhance students learning outcomes in the subject of Biology at secondary level. The objectives of study were: (i) to investigate the element of teaching related to background knowledge in teaching biology, (ii) to find out the elements of teaching related to knowledge integration in teaching biology, (iii) to examine the element of world beyond classroom in teaching biology, (iv) to explore teaching element of students representative participation for teaching biology and (v) to find out teaching element of narrative for teaching Biology. In the study the elements of teaching quality were selected from literature to investigate the issue of improvement of quality teaching and enhance students learning outcomes. There were four participant teachers selected through purposive sampling technique from three secondary schools of district Rawalpindi. The qualitative method was used in the study. Classroom observations and in-depth interviews were used as a data collection tools. For analyzing the data thematic analysis was used. Conclusion and recommendations were drawn on the basis of common points and theme. The research was beneficial for Biology teachers to improve the quality of teaching for motivating students learning. It was observed that teacher B,C&D connected the lesson with the world beyond the classroom and they were very friendly with academically weak students infrequently. About the background knowledge teacher A&D said it gave deep understanding about history of the topic while teacher C considered it helpful for integration of students' knowledge with current understanding. All the teacher perceived that academically weak students participated in classroom decoration, in sports and in gaming activities. It is recommended that teacher should relate the subject of Biology with the world beyond classrooms. Teachers may give extra time to academically weak students. Teacher should use diagrams, models and real plants during their teaching.

Keywords: Elements of teaching, connectedness, Background knowledge, knowledge integration, world beyond classroom, representative participation, quality teaching and learning.

1. Introduction

1.1 Origins and Definitions of Connectedness

In educational contexts, connectedness is primarily understood to mean having a sense of affinity and belongingness. However, other researchers have defined connectedness as a component of other related words,

such as "relatedness." Later, when the idea was connected to having concern for each student individually and their education, it solidified. As a result, the body of literature in this field grew, and additional notions like engagement, bonding, and belonging were eventually included. Little progress was accomplished during this time since the concept of connectivity in education was given several definitions and operationalization. The notion of connectivity is now recognized and positioned within the framework of the school climate, which includes four aspects: relationships, safety, the institutional environment, and the academic environment in accordance with this concept, connectivity (Liu, 2022).

In contrast to the contemporary literature, research in this field is still rife with interchangeable applications of connectedness, bonding, belonging, and engagement despite these advancements. It is thought that in order to promote more scientific advancement in this field and produce a cogent body of evidence, the words stated above—especially their similarities and differences—must be considered in order to achieve more conceptual clarity in this line of investigation (Liu, 2022).

1.2 Characteristics of Connected Teachers

There are several characteristics that teachers who work to create a feeling of "connectedness" with their students have in the classroom. The first quality of these teachers is that they make an effort to create a welcoming, encouraging, and democratic classroom environment. They also look for chances to engage with kids outside of the classroom, such as through sports, casual greetings, and lunchtimes (Neely et al., 2016).

Jokes and open communication techniques are common tools used by connected instructors to bridge the emotional and physical gaps in the classroom. An additional characteristic of connected educators is their customized, civil, and humanized approach to teaching, which is exemplified by their strong sense of empathy and openness to discussing issues with students (García-Moya, 2020). Depending on the context and academic objectives, this list of features can be expanded by running further studies including the voices of different stakeholders.

1.3 Teacher and Teaching Effectiveness: Models and Trends

Teaching profession was regarded as both a science and art in that it needs research findings on pedagogy and learning as well as creativity and talent on the part of the teacher. This mysterious nature of teaching and its direct impact on learning led to a surge of international interest in unpacking the characteristics of effective teaching/teachers in the context of L2 education listing various features. The commonality of these studies and their identified characteristics is that effective teachers have a good command of the target language, are good communicators, have interpersonal skills, can present the lesson meaningfully and excitingly, use group work to increase learner involvement, can establish a friendly and supportive learning contexts, consider students' emotions, and tolerate classroom errors (Stronge, 2018). Although these attempts are insightful for EFL/ESL teaching and learning, there are many other avenues in this area that are left unexplored. The following part presents research findings and evidence in teacher effectiveness. A summary of such characteristics includes teachers' useful classroom strategies, interactions, student involvement, emotion sensitivity, clear lesson presentation, professional and friendly classroom management and atmosphere, proper feedback provision, having pedagogical clarity, and being expert in curriculum content and the required teaching techniques (Liu, 2022).

The objective of the study was to find the elements of teaching related to connectedness that improve the quality of teaching and enhance students learning outcomes in the subject of Biology at secondary level in Pakistan.

1.4 Procedure of the Study

Five elements of teaching were selected from literature as a frame that were related to connectedness that improve the quality of teaching and enhance students learning outcomes in the subject of Biology at secondary level. The research was conducted with 04 biology teachers (02 females, 02 males) in the city of Rawalpindi, Pakistan, by using qualitative research methods. Data were collected through questionnaire, classroom observations and in-depth interviews. The collected data was analyzed and then conclusion and recommendations were made. The research will be beneficial for biology teachers to improve the quality of teaching for motivating students learning.

2. Review of Literature

In teaching much focus is placed on academic content and targets, which ultimately neglects the importance of student well-being. Fortunately, an emerging train of thought sees the relationship between students and teachers as

a complex bond that is about more than simply the teaching and learning process. This concept is known as 'teacher connectedness'. The goal is to nurture the bond between teachers and students instead of focusing solely on the exchange of curriculum-related information.

The teacher connectedness is a key component of a learning process that fosters student well-being. 'People tend to think that relationships with teachers are not as important for adolescent students as in earlier ages, but some of our studies suggest that relationships with teachers continue to be a very important factor for students' well-being in secondary education. Integrating teacher connectedness into the school experience plays an important role 'of course, student–teacher relationships cannot be fully understood without considering the broader context in which they take place. School-level factors can facilitate or hinder student–teacher connectedness. The student–teacher ratio is a factor that can affect a student's ability to connect with their teachers. The ideal scenario is that teachers can get to know, and provide individualised interactions with, each of their students. Research indicates that teacher connectedness can work even in large schools with many students, but only when there are enough teachers to provide a balanced ratio. Sufficient staffing and funding is needed to ensure a balance. (Garcia-Moya, 2020)

2.1 Putting Teacher Connectedness into Practice

Garcia-Moya, (2020) stated that students may not know how to engage in conversations aimed at building connections with teachers, so need a helping hand. It is important to provide students with sentence starters for productive conversation. Sentence starters are effective because they allow students to directly express their personal thoughts and feelings, which is a key component of developing a deeper connection with someone. Teachers can also take time to learn what they can about the personalities and interests of their students. Ideally, teachers should take the first step and talk a bit about themselves before asking their students to do the same.

At the beginning of the year, get to know each other with ice-breaker activities and be sure to participate in them. Note birthdays, haircuts, and new shoes; ask about weekends and have conversations about every day, ordinary things as your students enter your classroom.'

Some argue that trying too hard to build a close bond between teachers and students is counterproductive. There's concern connecting with students beyond teaching them could discourage learning. However, teachers building a relationship with students does not go against the delivery of effective teaching. Teachers who truly listen to their students and value their opinions will find the teaching process to be more effective and more rewarding. Students are not learning machines, just as teachers are people and not merely conveyors of knowledge – an emphasis on teacher connectedness recognizes this.

Wadouh et al, (2014) reported that a strong teacher-student connection contributes to a sense of community within the classroom. This sense of community promotes student collaboration and helps create a positive learning environment where students can learn from each other and develop essential social skills. These elements are: differentiation, adaptivity, student engagement, direct instruction, practice, formative assessment with immediate feedback and student explanation of learning. The three key elements of teaching and learning are teachers, learners, and the learning environment. Learners vary in their abilities, aptitudes, interests and backgrounds. Teachers must be professionals with knowledge of their subject, teaching skills, and personal attributes like passion, patience and commitment.

2.2 Related Researches

Garcia-Moya, I. (2020) stated that connectedness in student-teacher relationships during adolescence advocates a more holistic and proactive approach to wellbeing in education. The good student-teacher relationships are essential to students' well-being in school. Learners must create a complex, well-structured, and well-integrated network of knowledge in long-term memory in order to acquire expertise in a domain. Long-term memory has a virtually unlimited capacity. Knowledge structure is an important aspect for defining students' competency in Biology learning, but how knowledge structure is influenced by the teaching process in naturalistic Biology classroom settings has scarcely been empirically investigated. In this study, the results from the concept mapping task showed that the students in the high-linking classes constructed more correct relations among the concepts compared to the students in the low-linking classes. The results remained stable even after controlling for learning motivation. These findings confirm the importance of teaching interrelated facts and concepts instead of isolated facts for fostering students' knowledge structure. As a result, based on the Bavarian Biology curriculum, we develop materials and programs to enable students, student teachers, and teachers to focus on interrelated facts and basic concepts instead of isolated facts in Biology lessons.

Bowles & Scull (2019) stated that relevance to school connectedness was based on the four factors sequential model of school connectedness. The model suggests a progression from minimal connection to a deep level of acculturation and shared meaning relevant for adolescents between 12 and 18 years of age. It is argued that the four factors form the foundation for engagement and suggests the possibility of an experience of flow as a result of a student's connectedness with school. This is based on social, emotional, behavioural, and cognitive terms central to learning. The model is providing a template for establishing the student's current experience of school to facilitate interventions to optimise connectedness with school.

Adjimi, Nzabalirwal & Shivoga (2021) studied that Education is changing rapidly. Schools are gradually shifting away from the traditional mode of instruction and toward a more active model of learning, in which students are collaborating on projects in small groups and then sharing their work with the class. Strategies improved students' achievement in Biology. Results showed that students exposed to the cooperative reflective journal writing achieved more in Biology followed by students in the consensus group strategy. Collaborative strategy can be a feasible alternative approach to teaching Biology as it fairly addresses issues of interaction in the classroom. This has helped students develop their communication and also improve their socialisation skills in the classroom and beyond.

Berglund, H. (2022) stated that collaboration has the potential to strengthen both professional learning and well-being for teachers. However, it can also bring problematic aspects, such as increased workload and conflicts. Overall, this study shows that while continuity appeared important for developing valued collaborations, it can be difficult to obtain. Focusing on Biology teachers' experiences of benefits and difficulties in relation to more or less valued collaborations can help school organisations prioritise support, time and resources for professional development to allow for continuity in valuable collaborations that can strengthen the quality of Biology education.

Kervinen, Roth, Juuti *et al.* (2020) studied that science education can be alienating for students, as it is apart from the mundane world with which they are familiar. Science education research has approached the gap between everyday understandings and science learning largely as a challenge arising while learning about science concepts and the kinds of instructional approaches that may support this. However, the forms of everyday ways of relating to the world fundamentally expand beyond conceptual understandings. In this study, we use data from an outdoor science learning setting to examine a range of non-conceptual but culturally possible and intelligible ways in which students actually connect science learning processes to their everyday world and its characteristic commonsense understandings. Our findings suggest that the ways in which students connect their everyday world with science learning do not have to be explicitly related to the particular conceptual learning goals but can parallel conceptual learning while contextualizing it in affectively meaningful ways.

Bowles & Scull (2019) suggested a model provided a template for establishing the student current experience of school to facilitate interventions to optimize connectedness with school. Adjimi, Nzabalirwal & Shivoga (2021) study showed that collaborative strategy fairly addressed issue of interaction in the classroom. Berglund (2022) revealed that valuating collaboration is helpful for school organizations to prioritize support, time and resources for professional development to strengthen quality of Biology teaching.

3. Methodology

3.1 Procedure of the Study

This study is qualitative that is why the sample is purposeful and small. In present study four science teachers teaching biology at three secondary schools of district Rawalpindi Pakistan were selected as sample of study. In the first month, permission from Head of the Institutions was got. Then the relationship was developed to heads and participant teachers for conducting the study successfully. In each week, the researcher spent a day with the participant teachers to prepare him/her for cooperation in the study.

In the second and third months, classroom observations and interview of the participant teachers were conducted. Grade IX & X classes were observed during scheduled biology classes. While sitting in the classrooms rough notes were made of what was happening in class. This included the things the teacher was saying and doing, and students' responses both in terms of whole class interactions and actions of the individual students sitting close to researcher. The staff interview schedule was designed to obtain each teacher's views on teaching practices and students' outcomes based on each of the 5 selected elements. The interview schedule and observational schedule accompanied by a brief explanation that was provided to participants at least one day in advance of their interviews. During each interview, researcher took detailed notes. Each interview averaged approximately one and a half hours in duration. The data was collected through questionnaire and in depth interview and observations. The goal of

qualitative study was to comprehend the significance of experiences of the participants. This type of research on the other hand enables us to know how to create their words to assign meaning to their experiences.
The researcher observed each lesson using the classroom Observational Schedule as described previously. In observation the researcher coded each of the 5 elements observed on a 5-point Likert scale with the indicators used: Very Frequently, Frequently, Infrequently, Very infrequently and Not Evident in class. The researcher also completed descriptive notes to document evidence of observation. To know more about the nature of teaching and learning in the subject of Biology in these classes, their attitudes towards learning and the changes in classroom practices they wanted to enhance their motivation to learn Biology and improve their academic performance. The data was analyzed by using thematic analysis with inductive coding. Different researches have used and stated this method of data analysis (Medelyan, 2019, Saldana, 2015, Creswell, 2012 and Naz, 2023).

4. Results

Table 1: Observations of teachers in the classroom regarding element of Background Knowledge

In the classroom teacher	**Observations of Participant Teachers**			
	A	B	C	D
Prior knowledge of the students is consistently incorporated into the lesson.	2	2	1	2
Continuous connection is developed between known information and new information	1	1	2	2
The teacher invites the students to share their previous knowledge through conversation	2	2	2	2
Mostly, the teacher provides previous knowledge of the topic	3	2	2	2
The teacher asks recall questions to know the students' previous knowledge	2	1	1	2
Most of the lesson starts with background knowledge	1	1	1	2

Very frequently=1, frequently=2, infrequently=3, very infrequently=4, Not evident=5

Table 1 shows that teachers A,B,C&D consistently incorporated the prior knowledge of students frequently and teacher C very frequently. Teachers A,B&D continuous connection was developed between known and new information of students very frequently. Teacher A,B,C,D invited the students to share their previous knowledge through conversation frequently. Teachers B,C,D, provided previous knowledge of the topic frequently and teacher A infrequently. Teachers A&D asked students to recall previous knowledge frequently and Teacher B&C frequently while most of the teachers A,B,C started lesson with background knowledge very frequently and Teacher D frequently.

Table 2: Observations of teachers in the classroom regarding element of Knowledge Integration

In the classroom teacher	**Observations of Participant Teachers**			
	A	B	C	D
Lesson is completed integrated with other subject areas	2	1	1	2
Lesson is integrated with real life experiences knowledge integrates with the same discipline	1	2	2	2
Lesson is presented in reading and explanation Mode	3	2	2	2
Students understand the integration with	1	1	1	2

other subject areas

Very frequently=1, frequently=2, infrequently=3, very infrequently=4, Not evident=5

Table 2 shows that teachers B,C completed the lesson integrated with other subjects areas very frequently and teacher A frequently. Teachers B,C,D lesson was integrated with real life experiences knowledge with same discipline frequently and Teacher A very frequently and teacher A infrequently. Teachers B,C,D presented the lesson in reading and explanation mode frequently and teacher A infrequently. The students of teachers A,B,C understood the integration with other subject areas very frequently and Teacher D frequently.

Table 3: Observations of teachers in the classroom regarding element of World Beyond Classroom

In the classroom teacher	**Observations of Participant Teachers**			
	A	B	C	D
Almost all the lessons are completely connected with the world beyond the classroom	1	3	3	3
Students easily understand the connections between lesson content and real-world events	1	2	2	2
Students are easily able to connect the lesson content with real situation	2	1	1	2

Very frequently=1, frequently=2, infrequently=3, very infrequently=4, Not evident=5

Table 4 shows that almost all the lessons were completely connected with the world beyond the classroom of students by teachers B,C,D infrequently and Teacher A very frequently while students of teacher A,B,C,D easily understood the connections between lesson content and real world events frequently while Teachers A very frequently. Students of teacher B,C&D were easily able to connect the lesson content with real situation lesson frequently while teacher A very frequently

Table 4: Observations of teachers in the classroom regarding element of Representative Participation

In the classroom teacher	**Observations of Participant Teachers**			
	A	B	C	D
Almost all the students are equally engaged in classroom activities	1	1	2	2
The teacher gives equal attention to all the students	2	1	1	2
Teachers encourage academically weak students to participate in class	2	1	1	2
Teachers engage the academically weak students in classroom activities	1	1	1	2
Teachers ignore the academically weak students from participating in class	4	4	4	4
Students are very friendly behaving with academically weak	1	3	3	2
Students and support them in learning activities	2	1	2	2

Very frequently=1, frequently=2, infrequently=3, very infrequently=4, Not evident=5

Table 4 shows that almost all the students of teacher A&B were equally engaged classroom activities very frequently while teacher C frequently. Teacher B&C gave equal attention to the students in classroom very frequently and teacher A,D frequently. Teacher B,C encouraged students academically weak students to participate in class very frequently while teachers A,D frequently while teacher A,B,C engaged the students academically

weak students in the classroom activities very frequently while teacher D frequently. All the teachers (A,B,C,D) very infrequently ignored the students academically weak students while teachers B,C behaved students infrequently while teacher A very frequently and teacher D not evident.

Table 5: Observations of teachers in the classroom regarding element of Narrative

In the classroom teacher	**Observations of Participant Teachers**			
	A	B	C	D
Almost the entire lesson is delivered in Narrative form	3	3	3	2
History lesson is delivered in narrative form	1	1	1	2
Students taking part in lessons through sharing stories, events, experiences etc.	2	2	2	3
The lesson is presented in reading explaining mode	1	1	1	2

Very frequently=1, frequently=2, infrequently=3, very infrequently=4, Not evident=5

Table 5 shows that teachers A,B&C almost delivered lesson in narrative form in the class very frequently while teacher D frequently. Teacher A, B,C delivered history lesson in narrative form very frequently and teacher D frequently. Students of teacher A,B&C took part in lesson through sharing stories, event experiences frequently while teacher infrequently. Teachers A,B,C presented lesson in reading explaining mode very frequently while teacher D frequently.

4.1 Analysis of In-Depth Interviews of Teachers

4.1.1 Interview Participant Teacher-A

For presenting Teacher-A interview it is divided into five elements of quality related to connectedness.

4.1.2 Background Knowledge

1. According to her, background knowledge gives deep understanding of a topic and helps students understand better.
2. She presented background knowledge in the class by explaining the basic concepts of relevant topic.

4.1.3 Knowledge Integration

1. According to her, knowledge integration is very important.
2. She integrated her lesson with it her subjects with the help of examples so that the students can understand better.
3. She assessed the student's ability to integrate their current knowledge by analysing the questions they ask.

4.1.4 World beyond Classroom

1. According to her, integration of real world public problems with the lesson is helpful in better understanding the topic.
2. She connected the real life experiences with subject knowledge by giving easy and comprehensive examples.

4.1.5 Representative participation

1. According to her, most academically weak students are interested in participating in classroom decoration activities.
2. She helped academically weak students by appreciating them even on average marks.
3. To improve learning outcomes, she asked interesting questions about the lecture.

4.1.6 Narrative

1. According to her the narrative plays a very important role in influencing the learning of students.
2. According to her the narrative style of teaching helps students understand better.

4.2 Thematic Analysis of Participant Teacher-A

Interviewing about the aspect of connectedness she considered the element of background knowledge important for better understanding. She explained the basic concepts of relevant topic. Stating about the element of knowledge integration, she consider it important. She integrated her lesson with other subjects with the help of examples to make the lesson understandable. She assessed the ability of integration of the students by analyzing the questions they asked. Addressing the element 'world beyond classroom' she considered the importance of real world public problem in the lesson very important. She gave easy and comprehensive examples for integration. Opining about the element of representative participation, she said academically weak students keenly participated in classroom decoration activities. She appreciated weak students even on average marks. She said that through interesting questions in the class could increase the learning outcomes of these students. Stating about the element of narrative she thought it very important. She said that her narrative style of teaching helped the students to understand better.

4.2.1 Participant-B Interview Regarding Supportive Classroom Environment and its elements

4.2.2 Back Ground Knowledge

1. I think knowledge integration plays its role as a backbone.
2. I integrate knowledge through questioning

4.2.3 Knowledge Integration

1. I think knowledge plays a vital role in understanding.
2. I interpret the knowledge to improve the learning of the students.
3. I asses the knowledge integration by taking quizzes and giving assignments.

4.2.4 World Beyond Classroom

1. I think the real public problem helps to improve the students' concept.
2. I connect real life experience with daily life problems

4.2.5 Representative Participation

1. I think weak student like question answer to improve their thinking ability.
2. I think assigning home work practice can improve the performance of academically weak students.
3. I am using the strategy of encouragement to participate in class activities.

4.2.6 Narrative

1. I think narrative plays a key role in learning.
2. My lesson consist of narrative style of learning because it is very helpful.

4.3 Thematic Analysis of Participant Teacher-B Interview

For presenting Teacher-B interview it has been divided into five elements related to connectedness.

According to Teacher-B background knowledge played a role like backbone, he presented background knowledge by asking questions. Commenting on the element of knowledge integration he said that it played a vital role in understanding He added that he integrated his lesson with other subjects to improve the learning skills of the students. He assessed the integration of knowledge with current understating by taking quizzes and giving assignment. Stating about the elements world beyond classroom, the teachers though the importance of integration of real life experiences by explaining daily life problem. In response of element of representative participation he opined that the students were weak in their academic because they were unable to satisfy their questions answers to improve their thinking ability.

Teacher-B expressed that by giving home work for practice can improve students' performance. The teacher was using encouragement to participate in the class as a strategy to improve learning outcomes of the students. As far as the element of narrative is concerned he expressed that in teaching biology narrative played a key role in learning.

The teacher opined that his narrative style of teaching comprised of student facilitation with advanced lab equipment.

4.3.1 Interview of Participant Teacher-C Regarding Connectedness and its elements

4.3.2 Background Knowledge

1. The background knowledge is very important for teaching and learning. If the students have some background knowledge of the topic it makes easy to understand for the student.
2. I some time correlate the topic to some background knowledge to the student.

4.3.3 Knowledge Integration

1. Knowledge integration plays very important for student learning and the teaching of the teacher in some topic. If the student becomes able to integrate their knowledge it is the success of the teacher.
2. By their participation in the classroom activities by making some charts, models etc.

4.3.4 World Beyond Classroom

1. If the student understands a topic with clarity it will integrate the knowledge in the daily life.
2. I give example of my experience for knowledge integration of students.

4.3.5 Representative Participation

1. The students which are academically weak they like some gaming activity in the class. Because there is a competition in the student and they like the game like spelling the words or different terms of biology.
2. Making of groups of weak and good students play very good results in this regards.
3. Making of weak and good student and making pairs of these students with good student develop these slowly.

4.3.6 Narrative

1. Narrative works in all subjects differently in biology the student learn correct pronunciation of different term.

4.4 Thematic Analysis of Participant Teacher-C Interview about Connectedness

Interveiwing about the aspect of connectedness he considered the element of backgrounds knowledge very important for teaching and learning. Studetns background knowledge made the lesson easy and understandbable. He presented the background knowledge by correlating it to the topic. Stating about the element of knowledge integration he opined that it palyed very role in teaching learning. Students who had background knowledge understood the topic easily. He said that knowledge could be integrated with the help of example from practicle life. He assessed the students ability to integrate the knowledge by connecting the topic to the background knowledge of the students. Addressing about the element of world beyond the classroom he said that integration of real world public problems played very important role to increase the ability of knowledge inegration among students. He gave examples of his own experience to inegrate the knowledge of the students opining about the element of representatives participation. He opined that academically weak studetns liked gaming activities competitions. He thought that by making groups of weak and good students weak and shy students performance could be increased. He used peer learning strategy after making groups of weak and good students to improve the learning outcomes of the students. Stating about the element of narrative teacher C thought that narrative he all subjects differently. In biology students learnt correct pronunciations of different terms that was why my style of teaching was narrative.

4.4.1 Interview of Participant Teacher-D Regarding Connectedness and its elements

4.4.2 Background Knowledge

1. She said that background knowledge helps students in clearing concepts.
2. She presented background knowledge in the class by relating it with the present lecture.

4.4.3 Knowledge Integration

1. She said that knowledge integration was very important for complete understanding of the lecture.

2. She integrated her lessons with other subjects by giving examples from real life experiences to increase student's understanding of the lesson.
3. She assessed the students integration of knowledge by giving them worksheets or tests.

4.4.4 World beyond Classroom

1. She said that real world public problems help build student's interest in the lesson and make it relevant.
2. She connected real life experiences with subject knowledge by giving them assignments to write examples from their own lives.

4.4.5 Representative Participation

1. According to her, most students liked practical activities which didn't involve textbooks.
2. To improve academically weak and shy students, she gave them special attention and monitored them closely.
3. She improved learning outcomes by involving students in activities which force students to think.

4.4.6 Narrative

1. She said that narrative built student's basic understanding of the lesson.
2. Her lesson consisted on expository style of teaching because science subjects can be better taught by using this style.

4.4.7 Thematic Analysis of Participant Teacher-D Interview about Connectedness

Interviewing about the aspect of connectedness she consdered background knowledge helpful to clear the concept. She presented it in the class by relating it with present lecture. Stating about the element of knowledge integration she opined that it was very important for complete understanding of the lecture. She integrated her lessons with other subjects by giving examples from real life experiences to increase the understanding of the lesson. She assessed students integration of knowledge by givng them worksheets or tests. Addressing about the element about world beyond classroom she said that real world public problems helped to build student interest by making it relevant. She connected real life experiences with subject knowledge by giving them assignment to write examples from their own lives. Opining about the element of represenative participation she said that most of the academically weak student liked practical activities that did not involve textbook.

She gave special attention and close monitoring for the improvement of academically weak and shy students. She improved their learning outcomes by involving students in activiteis which forced them to think. Stating about the element of narrative she thought that narrative built basic understanding of the students. She said that her lesson consisted of especially style of teaching because Biology can be taught in better way through this style.

5. Conclusions

Classroom observation showed that participant teacher B,C&D infrequently connected almost all the lesson completely with the world beyond classroom. The observation also showed that teacher B,C&D were infrequently very friendly with academically weak students. It was also observed that all the teachers ignored the academically weak students. Observation showed that teacher AB&C delivered their lesson almost infrequently. Likewise each students infrequently took part in lesson through sharing stories, evelits, experiences etc. Teachers gave their views about the third aspect connectedness. Talking about the element of background knowledge teachers A&D say about its important that it gives deep knowledge about history of topic that is interesting for students, Teacher-B considered it a backbone to deliver the lecture, teachers considered background knowledge helpful to integrate their knowledge with current understanding through questions and discussion, teacher B by taking quizes and giving assignment, teacher C by making some charts or models as classroom activities while teacher D through worthskeets and tests.

Expressing about the element of 'world beyond classroom' Teachers A&D thought about the importance of integration of real world public problems with the lesson, helpful for understanding teachers B&C thought it helpful to explain daily life problem while teachers D considered it helpful to built student interest in the lesson to make it relevant. Teachers A connected the real life experience with the subject knowledge through telling real life examples, Teachers B connected real life experiences through the explanation of daily life problem. Teacher D by giving them assignments to write examples from their own lives. Telling about the elmenet of 'knowledge

integration' teachers A,B&D considered it important, teachers C&D said it palyed vital role in understanding. Teachers A&D say that knowledge can be integrated with other subjects after clear understanding of the concept. Teacher B integrated their lesson with other subject to increase, the learning skills of the students. Teacher B say it can be possible after creating the ability among students. Teacher D said that she integrated her lesson with other stubects by giving examples from real life experiences to increase students understanding of the lesson Teachers A&D assessed the students ability to integrate their knowledge with current understanding through questions and discussion, teacher B integrated it by taking quizes and giving assignment, teacher B by making some charts or models as classroom activities while teacher D through worksheets and tests.

Expressing about the element of world beyond classroom Teachers A&D thought of integration of real world public problems with the lesson helped for understanding. Teachers B&C considered it helpful to explain daily life problem while teacher D considered it helpful to built student interest in the lesson to make it relevant. Teachers A&D connected the real life experience with the subject knowledge through telling them real life examples, Teachers, B&C connected it by explaining daily life problem. Teacher D connected it by giving them assignments to write examples from their own lives. Stating about the element of respresentative participation Teachers A&D expressed that academically weak and shy students liked to participate classroom decoration, Teachers C students participated in sports, Teacher B students take interest in gaming activity like spelling the words or different terms of Biology while Teacher D students liked practical activities which did not involve textbooks. Teachers A&D expressed that academically weak and shy students performance can be improved through the teaching practices like appreciation even on their as verage marks. Teachers B&D by explaining the basic concepts, Teacher C by ensuring peer learning through grouping weak and good students while teacher D by giving them special attention and close monitoring. The strategies to improve the learning outcomes of students teachers A&D asked interesting questions about the lesson at the end of period, Teachers B&C by giving home work and asignments, Teacher D by involving students in activiteis which forced them to think.

Expressing about the element of 'narrative' Teachers A,C&D thought that narrative work helped in understanding, Teacher B considered it helpful for correct pronunciation of words and terms of Biology while teacher D considered it to build basic understanding of the leson. Teachers A&D stated that their lesson was consisted of narrative because with the help of real life examples interest was developed in the students Teachers B&C narrative style of teaching was comprised of students facilitation with advanced lab equipment, Teacher D also used narrative style of teaching because Biology could be taught through this style.

5.1 Recommendations

On the basis of thematic analysis following recommendations are made for Biology teachers.

- For quality teaching and learning the teacher should connect the content of the biology with the world beyond classroom.
- Quality teaching that enhances learning demand teacher support to academically weak students. The teacher may give extra time to academically weak students to resolve their learning difficulty and this way their performance can be increased.
- Teacher may improve the learning of the students by presenting diagram with detailed explanation and by using models or real plants if they are teaching about plants so that students can learn its use for practical life
- Teacher should conduct experiments, regularly related to the lesson taught. In this way student can be encouraged to improve their lesson. It is because Biology is a practical, activity based and applied subject.
- For improving the lesson teacher may incorporate daily life experiences of the students in the lesson for ensuring complete engagement of the students.
- Teacher may ensure the use of selected and most important elements of quality teaching and enhance students learning. For this purpose lesson planning can be helpful.

5.2 Implication for future Research

In the present study four biology teachers were selected through purposive sampling technique. The study was qualitative in nature further quantitative researches can be conducted to assess the elements of quality teaching that enhance students learning at secondary level in the subject other than biology.

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