

THE PERCEPTION AND PRACTICES OF SECONDARY SCHOOL
TEACHERS' USING IN INNOVATIVE TEACHING METHODS IN
BIOLOGY AT BONGA TOWN, KAFA ZONE



JIMMA UNIVERSITY
COLLEGE OF EDUCATION AND BEHAVIORIAL SCIENCES
DEPARTMENT OF TEACHERS' EDUCATION AND
CURRICULUM STUDIES

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June 2024
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THESIS

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Research Title: *The perception and practices of secondary school teachers' using innovative teaching methods in biology at Bonga town, Kafa zone*

Declaration

I, the undersigned, declare that this thesis is my original work, and that all the sources used for it are duly acknowledged.

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Confirmation and Approval

This thesis has been submitted for examination with our approval as thesis advisors

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Abstract

The purpose of this study was to investigate the perception and practices of secondary school teachers' using innovative teaching methods in biology at bonga town, kafa zone. To achieve the purpose of the study, descriptive survey research design was employed. To this effect, the study was conducted in four secondary schools in the year of 2016. Subsequently, 22 biology teachers, 4 laboratory technicians and 12 school principals as well as 292 students were participants of the study. Purposive sampling and stratified simple random sampling method were used in the study. The data were gathered through questionnaires, interviews and observations. The quantitative data gathered through questionnaires were analyzed by SPSS version 26, and interpreted with the help of percentage, mean value and standard deviation. Whereas, the qualitative data gathered through the open-ended questionnaire, interview and observation were analyzed by narration. The result of the study indicated that although secondary school biology teachers valued (held positive perception towards) using innovative teaching methods, practically they only used a limited percentage of teaching strategies at their classrooms. The result shows, what the secondary school biology teachers thought about application of innovative teaching methods deviate from what they were practicing in their teaching effort, it was also found that the practices of using innovative teaching strategies in biology classes were constrained by challenges such as: low utilization of internet access, insufficient availability of laboratory facilities, inadequate field project working places, absence of audio and video materials, inappropriate seats and blackboards. Finally, the study recommended teachers use different innovative strategies (approaches) depending on preferences of students learning needs, provision and fulfilling of learning resources by school administrative agencies including principals and PTA. Besides, partnerships between Bonga University and secondary schools need to be strengthened to provide professional support in the area of innovative teaching methods in biology.

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LIST OF ABBREVIATIONS AND ACRONYMS

SPSS: Statistical package for social Sciences

SD: Standard deviation

PTA: Parent teacher association

ICT: Information communication technology

MOE: Ministry of education

ESDP VI: Education sector development program six

ITRM: The information transmission and reception methods

CSDM: Cognitive strategies development methods

ADM: Attitudes development methods

CMSDM: Cognitive and motor Skills development method

CAI: Computer-assisted instruction

PBL: Problem based learning

PBL: Project Based Learning

IBL: Inquiry Based Learning

CHAPTER ONE

1. INTRODUCTION

This chapter contains background of the study, statement of the problem, objectives of the study, significance of the study, delimitation of the study, limitations of the study, operational definition of key terms and organization of the study

1.1. Background of the study

The world is moving towards competition. People struggle to learn, and to work hard to create a new learning environment. The purpose of education is not only teaching the text book and make the students understand but also adds innovative thinking creative environment and self-sufficiency (Kalyani & Rajasekaran ,2018). According to Garba, Byabazaire & Busthami (2015), in a 21st century learning environment, teaching and learning has to centers around the innovative use of existing and emerging technologies. Therefore, the global teacher has to draw from all possible best practices that will give his or her students the necessary knowledge, skills, and abilities to compete and work in the global economies (Richardson , 2012).

The recent study conducted in Nigeria by Udu (2018), shows that, emphasis is being laid on hands-on activities and child centered of teaching and learning and commented that the science teacher should therefore capitalize on authentic learning opportunities. The science teaching community should make the classroom and the laboratory to be full of activities to enable the students to have first-hand knowledge of science. They need always give the students assignments on continuous bases so as to keep them active and engaged. Practicing innovative teaching method especially in science education is prominent in the areas of the science education curriculum, teaching and learning of science.

Biology is one of the science subjects studied at the secondary school level in Ethiopia, teaching and learning biology requires the best teaching method to enhance students' participation and conceptual understanding (Nkechinyere & Mumuni, 2018). According to Udu (2018), by engaging in innovative practices, the learners' needs are met because it supports students' preference for learning by doing. Kalyani & Rajasekaran (2018), noted that, innovative teaching means creativity and novelty of the teacher which changes the style and method of teaching and

it is necessary for the present and future of education to help students to reach their full potential. The basic idea behind the term is that it defines a new or novel way of doing things aiming for innovation in teaching, teaching strategies employed should be different from what has been formerly obtainable (Nwaeze, Onuoha & Ukogo, 2016). Innovative teaching is sometimes perceived as opposite of traditional teaching, since it is regarded as student-centered and takes on the form of guided construction (Heaysman & Tubin ,2019).

Another study conducted by Baskaran & Rajarathinam (2018), pointed out that innovative teaching methodologies attract the attention of students, attract the interest for the subject and make them understand the concepts with ease. Regarding the method, the government of the Federal Democratic Republic of Ethiopia Ministry of education, General Education Curriculum Framework MOE, 2020) advocates creativity and innovation are agents of change and contribute to the economic prosperity of society in general and to the well-being of the individual in particular. Expanding and strengthening science, technology, and innovation in the education system create a wide range of opportunities that can stimulate students' interest in science and convergent creative thinking (ESDP VI)

In this regard, a pertinent question may ask, whether the innovative teaching methods are being effectively practice in classroom instruction in the secondary schools in the teaching of sciences particularly biology and What teachers' perceptions to ward effective innovative teaching and learning looks like. These questions can only be answered well if serious studies were conducted in this area in the country. As a contribution to the solution to the low performance and endeavor to answer this pertinent question, this study focused on the secondary school teachers' perception and practices of innovative teaching in Biology at Kafa Zone Bonga town.

1.2. Statement of the problem

However, implementing innovative teaching methods requires academics to develop new skills and understandings, take on extra work, risk failure and invite disapproval from staff and students (Fraser, 2019). Learning science faces several challenges, including the idea of memorizing uncorrelated concepts, the lack of investigative activities and the use of a teaching method that does not give a chance for the student and focuses on the information as the crucial target (Qarareh, 2016). A study conducted by Zewdu (2017), showed that the common obstacles to the employment of innovative methods of teaching. There were the Ethiopian tradition of teaching, lack of institutional support, and learning resources, teachers' lack of expertise, inappropriate curricular materials and teachers' lack of prior experience to actively participate in the teaching and learning process. Active learning methods were downgraded because of confusing impeding dynamics in secondary schools mainly poor perceptions and low professional competences (Girma, 2019). The study conducted by Sewagegn (2019), indicate that teachers largely depend on written assessment methods against innovative methods that would have been used to uncover students' creative and proficiency in their study areas. According to Legese & Mereba (2016), in order to implement the innovative methods, having knowledge about the methods alone is not enough; teachers' and students' perception of methods plays a significant role in influencing the practice of the methods positively or negatively.

Although, different researchers mentioned in the above showed challenges and different factors affecting the implementation of innovative teaching methods including innovative assessment mechanisms, they didn't focus more on teachers practices of innovative teaching methods with the integration of their perceptions. The researcher initiated to conduct this research because, most teachers were not seen using innovative teaching strategies in their schools and students were being seen learning through memorization skills depending traditional teaching methods at Bonga town secondary schools. This was also negatively impacting on students' academic achievement. For instance only 1.3% natural science students were get pass mark of grade 12 students' school leaving national exit exam of 2023. Regarding this, Bonga town administrative education office annual education performance report of 2023, indicated as there were many problems with practice of student centered teaching methodology including innovation in science subjects at secondary schools, due to this most students and parents were being seen rising complains on teachers poor teaching methodology.

In addition to all above, the researcher has seven years personal experiences as a teacher and a principal in the secondary schools of Kafa Zone including Bonga town. Based on this experience, the researcher looked in to the gaps that affect innovative teaching practices such as teachers' less perception to innovative teaching practices, inadequate allocation of budget for science subject teaching specially biology and instructional professionals do not give training to fulfill pedagogical gap of teachers.

Even though the pain is all natural science subjects (e.g. biology, chemistry and physics), the researcher was interested to study biology only, due to time and resource constraints. Therefore, the researcher intend to investigate generally biology teachers' perceptions and practices of innovative teaching methods specifically their awareness, practicing & adopting mechanism and critical issues facing their practices of innovative teaching approaches at the study site. In doing so, the researcher raises the following basic research questions. These were:-

1. What is the perception of Biology teachers' to ward innovative teaching in the study sites?
2. To what extent teachers practice innovative teaching method in their schools?
3. What are the major challenges that affect the practice of innovative teaching approaches at the schools?

1.3. Objectives

1.3.1. General Objective

The overall objective of the study was to explore and assess secondary school teachers' perception and practices of using innovative methods in Biology subjects at Bonga town of kafa zone

1.3.2. Specific Objectives

The Specific objectives of this study will include the following points:-

- To assess the extent to which Biology Teachers' perception to ward effective innovative teaching methods influencing positively or negatively.
- To verify the practices of relevant Innovative teaching methodology with in secondary schools
- To identify major challenges affecting implementation of innovative teaching approaches in biology in the study area.

1.4. Significance of the Study

The findings of this study could provide information significant to the following groups of people:

1. Education officers would use it to train teachers on strategies of innovative teaching and learning in order to improve their practicing skills.
2. The findings may help Jimma University as reference while developing and reviewing innovative teaching strategies at secondary school levels
3. The results of this study could also add to the already existing knowledge of teachers in the field of pedagogy, therefore help to foster the students achievement
4. Finally, the findings might inspire other scholars to conduct similar research in this area in other natural subjects.

1.5. Delimitation of the Study

The study was geographically delimited in Bonga town of Kafa Zone. Bonga town was selected for two main reasons. The first one was that the problems on the practice of innovative teaching method were highly observed in the secondary schools of this Town. Second the researcher was well familiar with the study area that enables him to obtain relevant information regarding to secondary teachers' perception and practices of innovative teaching in biology. The study conducted in the context of all four secondary schools found in Bonga Town of kefa zone. The study was conducted on only government secondary schools because there was no private secondary school. Conceptually the study delimited to teachers' perception and practices of innovative teaching method. With this regard, the study delimited to the teachers' perception and practices, in biology teaching and challenges towards the methodology. Thus, so, the findings obtained, the conclusion be reached, and the recommendation be made in this research reflected only the reality of the particular schools.

1.6. Limitation

There were some problems that limited the findings of the study to talk in absolute terms. Some of these problems were the availability and willingness of the respondents. Specifically, it was difficult to find principals for interview due to the nature of their work position made them busy. Some biology teachers were not voluntary to be observed in their teaching classroom settings..

Some of the respondents live in far area which can be difficult to contact them (Gedam secondary school).

1.6. Operational definition of basic Terms

Innovative: Innovative in this context is new; advanced and original methods that can enable someone to undertake unique activities.

Innovative teaching methods: Innovative teaching methods are teaching strategies which are different from traditional ones and are ways of teaching that aim to engage the students and promote their active participation and creativity.

Practice: Practice in this context is the actual application of innovative teaching method relating it to theories and doing different activities or training regularly so that to improve students' achievement.

Perception: Perception is the way we interpret and understand the information that our senses receive from the world around us.

1.7. Organization of the Study

The study was organized in to five chapters. The first chapter deals with introduction which includes back ground of the study, statement of the problem, research questions, objectives of the study, significance of the study, delimitation of the study and operational definition of key terms. The second chapter contains review of related literature. The third part deals with research design and method, setting of study area, source of data, population, sample and sampling techniques, data collection instruments, data collection procedures, pilot testing and methods of data analysis, and ethical consideration. The fourth chapter concerned with the Result, Discussion and Interpretation. The fifth chapter contained summary of findings, conclusions and recommendations of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. Introduction

The previous chapter attempted to justify the rationale for the research. In this chapter the literature relevant to secondary school teachers' perception and practice innovative teaching method in biology were reviewed accordingly. The chapter is divided into sections: the concept of innovative teaching, theoretical framework, conceptual framework and review of related literature.

2.2. Empirical review

2.2.1. Concept of innovative teaching

Educational innovations are understood as a procedure or method of educational activity that differs significantly from established practice and is used to increase the level of efficiency in a competitive environment (Mykhailyshyn, Kondur & Serman, 2018). Innovative teaching means creativity and novelty of the teacher which changes the style and method of teaching. All over the world, educational institutions implementing new ideas, methods, technology based innovations to enhance the students' knowledge. Innovative teaching is necessary for the present and future of education to help students to reach their full potential (Kalyani, & Rajasekaran, 2018). Innovation is a phenomenon that carries in itself the essence, methods, techniques, technologies, and content of the new (Mynbayeva , 2017).

2.3. Benefits of innovative teaching and learning

Some advantages of the innovative methods identified by Nwaeze, Onuoha & Ukogo (2016) include; creating a sense of responsibility in students as they become more involved in their learning, building a team spirit in students, etc. The use of innovative methods in educational institutions has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goal for the country (Kalyani & Rajasekaran , 2018). Moreover, the 21st century skills named by Bryan (2015), include creativity and innovation, critical thinking, problem solving, communication and collaboration. Hence, although the importance of developing these skills is not denied, they are

already largely present in the other key principles, defying the need for a separate category (Thibaut, Ceuppens, De Loof, DeMeester, Goovaerts, Struyf & Depaepe, 2018). Innovative teaching incorporates technology in to teaching learning methods to create a rich learning experience for students and a rewarding teaching experience for faculty (Khairnar ,2015). With the increase of the globalization, educators are required to have the ability to adapt to technological changes and meet the new needs to solve complex problems. To address this challenge, active methods of teaching and learning are required with a particular emphasis on making the connection between theory and practical application that helps the students to understand the content of the course. With the use of these active methods, students are required to evaluate project scenarios with a diverse range of external and internal variables that require both technical and non-technical skills during the solution process. So, the use of active methods improves the understating of basic concepts, encourages deep and creative learning, and develops teamwork and communication skills (Puranik (2020). Some advantages of the innovative methods include; creating a sense of responsibility in students as they become more involved in their learning, building a team spirit in students (Nwaeze, Onuoha & Ukogo, 2016). The use of innovative methods in educational institutions has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goal for the country (Kalyani & Rajasekaran , 2018).

2.4. Global trends of innovative teaching practices in different countries

Through French, Imms, Mahat (2020) case studies, four schools in Australia and New Zealand, identified the commonalities between the schools' independent transitions resulting in four shared characteristics of a successful transition from traditional to innovative learning environments. Other research was developed by Udu (2018) to examine innovative practices in science education which was identified as a panacea for improving students' academic achievement in science subjects in secondary schools in Nigeria, therefore, the paper pointed out that when teachers adopt innovative practices in science education, the students' academic achievement are greatly enhanced. According to Muniandy (2023), the intention of reviewing the Malaysian perspective regarding the pedagogical practice, the presented study has underlined that teachers handling various subjects are lacking behind in terms of knowledge and awareness of pedagogical teaching practice. They need to be trained to employ the innovative teaching techniques of pedagogy to enhance the education system of Malaysia.

2.5. How can teachers make classroom for innovative teaching

Innovative approach to teaching science and technology, which is more student-oriented and at the same time ensures and promotes high-quality teaching and learning. Changes in schools, therefore, are definitely possible, if the teachers truly feel the need for change, if they provide the time and approach this task with commitment and the appropriate knowledge. Set classes organized in such a way meet one of the basic conditions for acquiring high-quality knowledge and skills, from various perspectives of organizing the educational process in lower secondary school grades (Fiksl, Flogie, & Aberšek, 2017). According to French, Imms & Mahat (2020), there should be the characteristics of a successful transition of a school from traditional classrooms to an innovative learning environment. So that some schools today are converting traditional classrooms into spaces which are flexible, supporting a wide array of teaching and learning possibilities (i.e. an 'innovative learning environment'). These schools envision a future in which teaching, culture and space align to result in engaged students achieving deep learning.

2.6. Methods of innovative teaching or strategies

Some of the definitions include that of Kizlik, (2016), who defined teaching methods as processes that are primarily descriptions of the learning objective-oriented activities and flow of information between teachers and students. Kalyani & Rajasekaran (2018), defines innovative teaching method as a new or novel way of doing things aiming for innovation in teaching, teaching strategies employed should be different from what has been formerly obtainable Nwaeze, Onuoha,& Ukogo (2016), stated teachers are no longer required to bear the full burden of the students learning but are seen more as guide, facilitator and role models that direct and steer the students towards their learning needs. Nwaeze, Onuoha, & Ukogo (2016), teaching method also called teaching strategy or instructional strategy, has variously been defined by several authors. A teaching strategy refers simply to an approach, method or a combination of carefully designed classroom interactions that could be followed meticulously to teach a topic, concept or an idea. This brings us to the issue of having numerous teaching strategies or methods.

2.7. Types of innovative teaching or strategies

They include case study method; problem and project based learning, research methods, trainings which foster students' autonomy, critical and creative thinking skills (Borisova, & Klimova ,2015). However, they emphasized as innovative any active participation of students in other forms that they do in the classroom, such as learning through play, drama, learning outside the school environment as an opportunity to involve students' interests and develop different skills. Any teaching methods that serve this purpose without destroying the objective could be considered as innovative methods of teaching (Subramani & Iyappan, 2018). Kalyani & Rajasekaran (2018), showed different types of innovative teaching methods in their research as Audio & Video Tools, Brainstorm, Classes outside the Classroom, Role Play, Welcome New Ideas, Puzzles and Games, Refer Books on Creativity, Introduce Lessons like a Story, Role Playing, Z to A Approach. The study conducted by Ukala (2018), identified innovative teaching methods or strategies as Acronym Memory, Active Learning, Classification, Computer Assisted Instruction, Constructivism, Demonstration, Field Trip, Graphic Organizers, Guided Discovery, Manipulatives, Models, Peer Tutoring, Problem Solving, Project Based Learning, Role Playing , Socratic Method, Study Aids and Team Teaching. Another study conducted by Sumathi (2022), pointed out different innovative teaching methods or strategies as, Flipped Classrooms, Project Based Learning: Inquiry Based Learning: QR- Codes: Educational apps and software: Creative teaching: Interdisciplinary teaching: . Brainstorming: Virtual teaching and augmented reality: Gamification: Differentiated Instruction: Teaching for social and emotional learning: Remote Assessment Strategies: Vocational Teaching: Deep Technology Teaching: According to Modebelu & Duvie (2012), there are four improved as well as innovative methods of teaching and learning such as, The information Transmission and Reception Methods (ITRM), The Cognitive Strategies Development Methods (CSDM), The Attitudes Development Methods (ADM) and The Cognitive and Motor Skills Development Methods (CMSDM)

2.7.1. Brainstorming

Brainstorming is one the modern methods of teaching and learning it begins with forming several groups, division of duties, and active participation of students (Rizi, Najafipour, & Dehghan, 2013). According to Nazarov (2021), the implementation of a brainstorming method usually involves a group, and the group members are free to propose relevant ideas for the topics. Brainstorming contributes to the increase in students' motivation, confidence, and participation

as reflected by the positive students' behavior, Unin & Bearing (2016). In order to produce innovative ideas; one must have a design-thinking mentality (Mentzer, Farrington & Tennenhouse, 2015).

2.7.2. Computer Assisted Instruction

Computer-assisted instruction (CAI) is an instructional approach where a computer is used to communicate the instructional materials and evaluate the learning outcomes. It uses a blend of graphs, texts, sounds and videos for learning process (Suleman, ussain, Din & Iqbal 2017)). Kareem, (2015), recommended that computer-assisted instruction should be used in the teaching of Biology at secondary school to improve students' academic performance on the subject. Jesse, Twoli, & Maundu (2015), also concluded that use of computer-assisted instruction improves secondary school learners' performance in science.

2.7.3. Demonstration

Demonstration is instructional strategy simply means the use of apparatus (instructional materials) by the teacher to clearly show and explain the concepts being taught with convincing reasons or proofs. This approach involves displaying of the right instructional material, coaching the students with the aid of the instructional material to understand the concept at hand and drilling the students (Charles-Organ and George, 2016 in Tofi, Achor, & Eje (2022). According to Loiser & Endne (2022), as one of the alternative learning methods that can activate students, the demonstration method can be applied in the classroom which is expected to increase the level of thinking and experience of students, especially if students are expected to practice about a material that is understood. Umara (2022), conclude that the results of the learning implementation showed that the ability of students increased significantly after using the demonstration method

2.7.4. Problem based learning (PBL)

Problem based learning is an instructional approach that has been used successfully for over 30 years and continuing to gain acceptance in multiple discipline. It is an instructional (curricular learner centered approach) that empowers learner to conduct research integrate theory and practice and apply knowledge and skills to develop available solution to defined problem (Savery, 2015). According to Syafii & Yasin (2013), PBL was approved to help the students to achieve academic excellence especially for the Biology subject. The teachers in the schools

should be expert to employ PBL in the process of teaching and learning appropriately in the classroom. This is because it has already proved to be one of the best approaches in teaching. Orozco & Yangco (2016), recommended that teachers use the PBL approach in biology classes to enhance the critical and creative thinking skills of the students.

2.7.5. Project based learning

PBL can be introduced into classrooms in a number of ways: Teachers and schools can make use of externally developed PBL curricula, they can develop their own PBL approaches, or PBL can be part of a whole-school reform effort. Implementing PBL is often challenging. It requires that teachers modify their roles (from directors to facilitators of learning) and that they tolerate not only ambiguity but also more noise and movement in the classroom. (Condliffe, 2017). Wekesa & Ongunya (2016), recommended that Project based learning technique being student centered approach, change students' attitudes towards classification positively that contribute towards improved academic performance.

2.7.6. Inquiry Based Learning

Pearce & Lee (2021), states that Inquiry-based learning happens through exploration and the integration of real-world experiences, with learners controlling their own acquisition of knowledge as the instructor serves as a facilitator. According to Sabri, (2019), an inquiry-based activity positively affects students' learning experiences and promotes students' self-regulatory learning skills, the findings of the study revealed a lack of effective implantation of IBL instructions, as IBL application was limited to structured or guided inquiry and lacked appropriate assessment methodologies in the observed practices. Mukandayisenga, David, & Nsengimana, (2021), recommended IBL was an effective teaching method towards learners' achievement in biology. It motivates learners to follow the lesson and express their opinions, which contribute to better performance.

2.7.7. Field trip

Field-trip is a method of teaching that involves taking the students on an excursion outside the classroom for the purpose of making relevant observation necessary for understanding of the topic under study (Akubailo 2010, in Ezechi, 2018). Biology teachers in schools should be encouraged to use field trip and discovery methods in teaching other concepts in biology.

Secondary school Biology teachers are recommended to adopt Field Trip teaching methods (Ejeh, Adejoh, Ochu & Egbe-Okpenge, 2021)

2.7.8. Flipped classrooms

There are many definitions regarding flipped classroom in literature. DeLozier & Rhodes (2017), stated Flipped classrooms as the practice of assigning lectures outside of class and devoting class time to a variety of learning activities. According to Bishop and Verleger (2013) in Ozdamli, & Asiksoy (2016) flipped classroom is a student-centered learning method consisting of two parts with interactive learning activities during lesson and individual teaching bases directly on computer out of lesson. Mull (2012) in Ozdamli, & Asiksoy, 2016) defined it as a model that provides students prepare themselves for the lesson by watching videos, listening podcasts and reading articles. According to Milman , (2012) in Ozdamli, & Asiksoy, 2016) it is an approach aims the efficiency of lessons by transferring knowledge to students via videos and podcasts as well as by discussions, group works and applications during course. The findings indicated that flipped classroom strategies are superior to the conventional strategy in promoting cognitive achievement in Biology among the students (Oyewumi, 2021). Flipped learning approaches should be embraced as a potentially valuable learning approach tool, given the current shift towards learner-centred self-learning (Chebotib, Too & Ongeti (2022).

2.7.9. Guided discovery

Guided discovery learning is a learning model that is considered capable of improving student learning outcomes while Self-efficacy is self-confidence in an individual's abilities (Atiyah, Miarsyah & Sigit, 2020). Guided-discovery is an instructional approach in which students discover knowledge through the guidance of a facilitator in order for the learner to reach mutually-agreed upon goals (Edoho and Abasi, 2019 in Tofi, Achor, & Eje (2022). The role of an instructor is merely to provide suitable learning environment and a guide.

2.7.10. Peer tutoring

Peer-tutoring is an organized method of instruction in which two or more students help each other to learn by working together and learning from each other. It provides small group, intense, focused, individualized instruction that fosters creativity, self-confidence, development of problem solving skills, and active interaction among students (Ali, Anwer &Abbas, 2015). According to Ullah,Tabassum, Kaleem (2018), peer tutoring enhances

the academic achievement of students. Hence, it is an effective method of instruction for teaching biology at secondary level. They suggested that peer tutoring may be incorporated along with other teaching methodologies for the subject of biology and it may be given due consideration in all teacher education practices in the country. Ikani & Ishaku (2020), conclude that, the use of peer tutoring approach in teaching have well noted facilitative effect on students' academic achievement and interest in biology difficult concepts. The results of the students taught Biology difficult concepts using peer teaching approach have a significantly greater achievement and also exhibited higher level of interest in Biology difficult concept than that student who is taught biology difficult concepts using conventional lecturer method.

2.8. Challenges in practicing innovative teaching methods

Many of the challenges face to innovative teaching in the current practices. Many of the challenges was discussed by Eliza Avdiu and Andrea Holzinger (2022) in their research “On the other hand, innovative teaching is also a challenge for teachers, considering the process of changes that are taking place to implement the new curriculum in order to cover the digital competence which has been lacking as a field, but it is showing progressive results given that teachers stay all day long in school and this enables the learning process to become faster, more improved and more diverse. Today, the modeling of innovative teaching requires the updating of the material, because the approaches to methods that bring information to the learners to meet their needs and prepare them for the future are changing just as life is changing”.

2.9. Teachers' perceptions towards innovative teaching

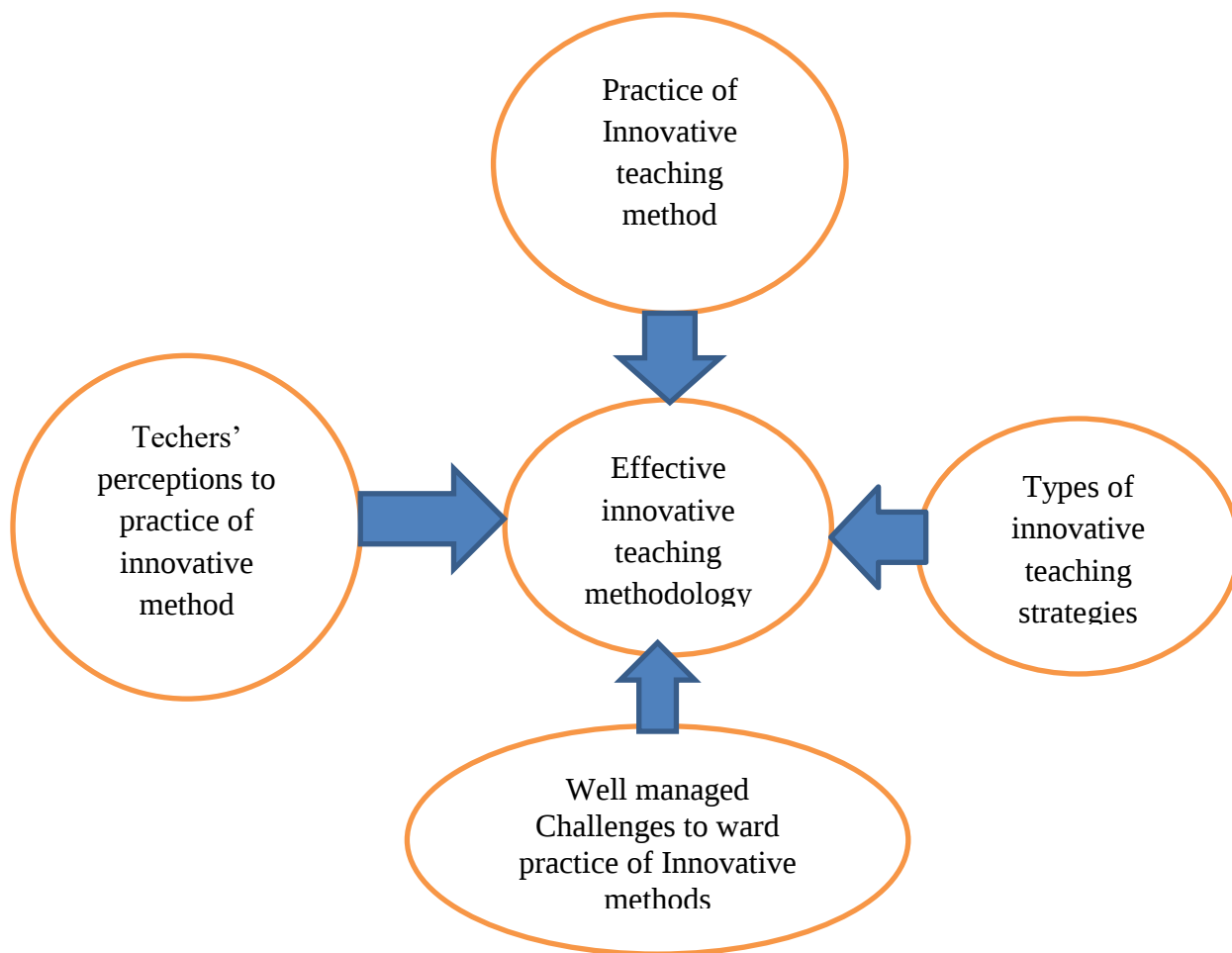
Innovative teaching methods can be contributed by science teachers' perceptions of creativity that are at variance with the accepted meanings. Teachers' perceptions of creativity could influence their classroom practices and therefore either enhance or inhibit the development of scientific creativity in learners. Hamed, Preece, & Hashim(2016) stated ,among other factors that influence innovative and creative teaching are personal efforts, teaching beliefs, teaching commitment and personal knowledge. In addition, the value teachers place on creative traits in their learners could also influence their classroom practices (Ndeke, Okere & Keraro, ,2016).Teachers have limited understanding of classroom practices that enhance scientific creativity in their learners, however, this can be improved if their conceptualization in the classroom context is improved (Ndeke & Keraro (2020). According to Vander Heijden, Beijgaard,

Geldens & Popeijus (2018), Varying degrees of teachers' perceptions of themselves as change agents, their characteristics and how these characteristics are related to personality and contextual factors. The negative aspects of perceptions due to incomplete knowledge or understanding, which results in the intensification of conflict paradigms, could influence the method, Amador (2014).

2.10. Conceptual framework of the Study

According to Mutai (2000), the conceptual framework is the relationship between variables in a study showing them graphically and diagrammatically. The study is conceptualized on the fact that practices of Innovative teaching how can be connected with Teachers' perceptions and finally give contribution to students' academic achievement it. The other fact is challenges which have power to hinder all processes of the practice, whatever it should be managed properly. For this, different scholars suggested that how all these critical items shown in the diagram can affect student learning either positively or negatively. Mykhailyshyn, Kondur & Serman (2018), stated Educational innovations include pedagogical innovation, scientific and methodological innovation, educational and technological innovation. According to Udu (2018), Innovative practices are tools that empower both students and teachers. By engaging in innovative practices, the learners' needs are met because it supports students' preference for learning by doing. Applying innovative methods used to enhance quality of education so as to develop creativity and empower people and ultimately to achieve the human development index of our country, Puranik (2020). Teachers' perceptions are a factor likely to influence their confidence and effectiveness teaching those concepts. To understand which teaching methods are most likely to effectuate student learning in areas (Smith, Rayfield & McKim ,2015). Eliza Avdiu and Andrea Holzinger (2022) in their research "On the other hand, innovative teaching is also a challenge for teachers, considering the process of changes that are taking place to implement the new curriculum in order to cover the digital competence which has been lacking as a field, but it is showing progressive results given that teachers stay all day long in school and this enables the learning process to become faster, more improved and more diverse.

Figure 1. The relationship between teachers' perceptions, practice and challenges of using innovative teaching method



Source: synthesized by the researcher from review of related literature

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Design of the study

Descriptive survey Research design was used for this study. The Descriptive survey was preferred here, because the survey research design is cross-sectional for the data to be collected at one point in time. Survey design also helps to describe and interprets the current conditions that exists, opinions that are held, processes that are going on or trends that are developing. Descriptive survey is also characterized by describing data on variable of interest and it is useful for gathering factual information, data on attitudes and preferences, belief and predictions, behavior and experiences-both past and present (Cohen, Manion & Morrison (2000). A survey method is described as scientific methodology that collects information from a large population for purposes of description, exploration and explanation. It uses a questionnaire or interviews to collect the data McMillan & Schumacher (2010). The term survey is used for the techniques of investigation by a direct observation of a phenomenon or a systematic gathering of data from population by applying personal contact and interviews when adequate information about certain problem is not available in records, files and other sources, Pandey & Pandey (2021). Descriptive survey design is very analytical, conceptual and inferential, which describes existing conditions by comparing groups of respondents about their thoughts, opinion and experiences. Therefore, in this study descriptive survey helped me to gather and analyze quantitative data for in-depth and wide information.

3.2. Population, sample and sampling technique

The population of this study was students, biology teachers, laboratory technicians and school principals of all four secondary schools such as Bishaw W/yohanis, Mehal ketema, Girazmach Pawulos and Gedam secondary schools in the year of 2016. This means all available secondary schools in the town were taken purposefully. To this end, 22 Biology teachers, 4 Laboratory technicians, 4 School principals and 8 vice principals were taken directly by purposive sampling techniques. In order to represent out the large number of population of students (Male = 916 & Female = 1030 Total =1946) the researcher used stratified random sampling method. Stratified random sampling techniques are generally used when the population is heterogeneous or

dissimilar, where certain homogeneous or similar sub-populations can be isolated (Futane,& Tech 2024). Therefore students of different grade levels were taken as strata, and then samples were selected from each stratum by simple random sampling. According to the argument of Alreck & Settle (1995), it is seldom necessary to sample more than 10%, convinced. Therefore, the researcher decided to sample 12% of the population of the students by using simple random sampling technique (lottery method) to take male = 138 female = 154 total = 292, those who were exposed to respond questionnaire.

Table 1: Population, sample size and sampling techniques of biology teachers, laboratory technicians and school principals

No	Name of secondary Schools	Biology teachers			Laboratory technicians			School principals			Total population	Sample size	Sampling Technique
		M	F	T	M	F	T	M	F	T			
1	Bishaw w/yohanis secondary Schools	6	3	9	1	0	1	3	0	3	13	13	Purposive sampling
2	Mehal ketema secondary Schools	4	2	6	0	1	1	2	0	2	9	9	Purposive sampling
3	Girazmach Pawulos secondary Schools	4	1	5	0	1	1	3	0	3	9	9	Purposive sampling
4	Gedam Secondary school	3	0	3	1	0	1	3	0	3	7	7	Purposive sampling

Table 2: Population, sample size and sampling techniques of students

Grads	Bishaw w/yohanis secondary Schools			Mehal ketema secondary Schools			Girazmach Pawulos secondary			Gedam Secondary school		
	M	F	T	M	F	T	M	F	T	M	F	T
9	123	183	306	37	39	76	77	109	186	52	60	112
10	133	167	305	59	64	123	73	91	164	36	48	84
11	79	64	143	15	14	29	40	26	66	44	37	81
12	80	74	154	13	5	18	33	22	55	22	27	49
Total population	415	488	908	124	122	246	223	248	471	154	172	326
Sample size	63	73	136	19	18	37	33	37	70	23	26	49
Sampling technique = Stratified random sampling technique was applied												

3.3. Data collection instruments and procedures

In order to seek adequate answers for the research questions, quantitative instruments of data collection were used. These instruments consisted of questionnaire, interview, and observational checklist. According to Creswell (2016), multiple instruments will employ to strengthen and counter check the data were collected through other instruments.

3.3.1. Questionnaire

Sets of questionnaires were prepared and given to a group of individuals targeted to obtain data such as biology teachers, laboratory technicians, school principals and students in face to face situations. The questionnaire consists of a mixture of closed-ended and open-ended questions translated to Amharic. Thus, 37 closed ended questions were designed respondents to verify and confirm, usually eliciting only simple and specific answers, whereas 8 open ended questions on the other hand, were meant to gather more information through elaboration and explanation. Also they offered more freedom to the respondents to expound on their views, feelings or attitudes toward a subject. This method has been chosen because a lot of information from a large number of people can be collected within a very short time and it is economical in terms of money and time.

3.3.2. Interview

The interview was also conducted in Amharic to make communication easier. Eleven semi-structured interview questions were designed to gather data from Biology teachers, laboratory technicians, principals and students. The researcher conducted interview with 16 informants who

have been selected from population purposefully. In the nature of this study both structured and semi-structured interviews were employed to collect rich and deep information focused on teachers' perception and practices of innovative teaching methods the challenges as well .

3.3.3. Observation

After computing the total score in the quantitative items measuring classroom practices in the Biology teachers' questionnaire, 4-biology teachers were selected to be observed during their lessons from each school. Four (4) biology lessons were observed for each teacher was giving their lessons in the class. The researcher sat in the classroom during the biology lessons and noted all the classroom activities that occurred during the lesson. This continued for the entire period of the lesson, which was 40 minutes for a single lesson. Both theory and practical lessons were observed in order to capture as many activities as possible.

3.4. Validity and Reliability of instruments

Experimental test was conducted to secure the validity and reliability of the instruments with the objective of checking whether or not the items included in the instrument can enable the researcher to gather relevant information. The presence or absence of a biased value is associated with validity and the presence or absence of an error value is associated with reliability (Park, 2021). To assess the validity and reliability of a survey or other measure, researchers considered a number of things. "If researchers are considering these points of validity and reliability of the questionnaire, it could affect the believable of the study" (Singh , 2017).

3.4.1. Validity

The validity of the instrument relates to its appropriateness for measuring what it is intended to measure. The validity of research instruments were ensured by assessing the questionnaire item during their construction. To ensure validity of instruments, initially the instruments prepared by the researcher developed under close guidance of advisors, who involved in providing their inputs for validity of the instruments. Questionnaires were checked and corrected by 4 English teachers of Bonga education college teachers, because the researcher believes that they would provide richest information regarding to the validity of instruments since they are English subject specialists. The participants were informed to give feedback on the relevance of the contents, item length, and clarity of items and layout of the questionnaire. Based on feedback, the instruments were improved before administering to the main participants of the study.

3.4.2. Reliability

Reliability of an instrument is the dependability or trustworthiness of an instrument. This means the degree to which the instrument consistently measures what it is supposed to measure. For the researcher to check the reliability of questionnaire, two procedures were used. The first was the researcher carried out a Test-Retest method where a respondent who completed the questionnaire was asked to complete it again after two weeks and his/her choices compared for consistence. The second is using Cronbach alpha method with help of Statistical Package for Social Science (SPSS) version. Based on the pilot, reliability can be ensured by using the result of average of the reliability

3.5. Methods of data analysis

Since the design of the research is descriptive survey, all the data collected through the above instruments i.e. through questionnaire, interview, and observation were analyzed, presented and interpreted quantitatively and qualitatively by using descriptive statistics and narrative. Depending on the nature of the collected data through questionnaire, interview and observation, different statistical techniques were employed in the study for data analysis and interpretation. The data collected through questionnaire were tallied, tabulated and filled in to SPSS version 26 and analyzed with the help of percentage, mean and standard deviation. Among different types of descriptive statistics, percentage, mean and standard deviation were preferred for analysis and interpretation of the data as in simple and understandable way. The interpretations were made for all five point scale measurements: SA= strongly agree (5), A= Agree (4), N= Neutral (3), D= Disagree (2) and SD= strongly disagree (1). Therefore, the interpretations were made for all five point scale measurements based on the following mean score results:

1. 1.00 – 1.49 = strongly disagree/Very low/
2. 1.50 – 2.49 = Disagree/ low/
3. 2.50 – 3.49 = undecided/ moderate/
4. 3.50 – 4.49 = Agree/high/
5. 4.50 – 5.00 = strongly agree/very high/

Source: Bluma (2012)

The qualitative data that was gathered through interview and observation was described and transcribed by coding themes to supplement the quantitative method. This method of data analysis in qualitative data helped the researcher to transcribe data in the forms of thematic

categorization. The interview data was analyzed by using the “audacity” software. In this case the data came from voice, which have the same behavior was grouped in the same category accordingly and also interpreted. Finally, conclusions and recommendation was drawn based on the analysis and interpretation of all data.

3.6. Ethical issues

Ethical considerations in research involved outlining the content of research and what would be required of participants, how informed consent was obtained and confidentiality ensured. It concerns protection of respondents’ autonomy, maximizing good outcomes while minimizing unnecessary risk to research assistants. Researcher explained the aims of study to respondents and told them truthfully that their involvement is voluntary. Also researcher explained potential benefits to school head teachers, teachers and students as a result of a study. The respondents will inform of all data collection devices and activities. The respondents treated also, with respect of their personal identifiers. Anonymity of the respondents was also assured and the data that provided were treated with extreme confidentiality.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

As it is mentioned in chapter three data collection includes many activities. It ranges from finding people and places to collect good and reliable information. Moreover it helps to collect reliable information in order to answer researcher's basic research questions. The major quantitative data with some of qualitative data collection tools used in this research were questionnaires and Interview & observation respectively. Questionnaires were distributed to 22 biology teachers, 4 laboratory technicians, 12 school principals and 292 students. From these, all biology teachers, laboratory technicians and school principals properly filled and returned back, but 7 questionnaires were not correctly filled and returned back from students. Therefore, the rate of return of questionnaire was 285(98%). In addition, four biology teachers and two school principals and six students were interviewed successfully. The goal of the interview was to explore deeply the respondents' attitudes, feelings and perspectives concerning the teachers' perceptions toward innovative teaching, practices and challenges in practicing. Finally four biology classroom observations were made in order to check whether the practice was made at the grassroots.

3.2 Characteristics of the respondents

As it is mentioned under the table respondents (biology teachers, laboratory technicians, school principals, and students) different characteristics such Sex, Age, Educational qualification, Work experiences were summarized in short.

Table 3: Characteristics of the Respondents

No	Items	Category of items	Respondents							
			biology teachers		laboratory technicians		school principals		students	
			No	%	No	%	No	%	No	%
1	Sex of respondents	Male	16	72.7	2	50	12	100	133	46.7
		Female	6	27.3	2	50	0	000	152	53.3
		Total	22	100	4	100	12	100	285	100
2	Age of respondents	25 years and below	2	9.1	1	25	0	0	283	99.3
		26-35 years	2	9.1	3	75	0	0	2	0.7
		36- 45 years	5	22.7	0	0	2	16.7	0	0
		46-55 years	12	54.6	0	0	6	50	0	0
		Above 55 years	1	4.5	0	0	5	41.7	0	0
3	Educational qualification of respondents	Diploma	0	0	1	25	0	0	0	0
		First Degree	13	59.1	3	75	8	66.7	0	0
		Second Degree	9	40.9	0	0	4	33.3	0	0
4	Work experience of respondents	1-5 years	3	13.6	1	25	0	0	0	0
		6-10 years	2	9.1	3	75	0	0	0	0
		11-15 years	4	18.2	0	0	1	8.3	0	0
		16-20 years	7	31.8	0	0	4	33.3	0	0
		Above 20 years	6	27.3	0	0	7	58.3	0	0

As indicated in table 1, item 1, 16 (72.7%), 2 (50%) and 12 (100%) respondents from biology teachers, laboratory technicians and school principals respectively were male and 6 (27.3%), 2 (50%), and 0 (0%) respondents were females respectively. This result implies that the surveyed schools were predominated by male practitioners contrasted to females; even school principal position was not seized by any female professional. With regard to the age distribution of the respondents as indicated under item 2 of the above Table, 2 (9.1%), 3 (75%), 0% and 2 (0.7%) biology teachers and laboratory technicians, principals and students respectively were found in the ranges of 25 years and below, 5 (22.7 %), 0%, 2 (16.7%) and 0% biology teachers, laboratory

technicians, principals and students respectively were found in the ranges of 26-35 years, 5 (22.7%) and 2 (16.7%) biology Teachers and School Principals respectively were found in the ranges of 36- 45 years, 12 (54.6%) and 6 (50%) biology teachers and school principals respectively were found in the ranges of 46- 55 years and 1 (4.5%) and 5 (41.7%) biology teachers and school principals respectively were found above 55 years. This figure indicates that the majority biology teachers were experienced adults, whereas some biology teachers and laboratory technicians were less experienced. Hence, we could safely claim that all the involved study participants (teachers, laboratory experts and school principals) are well informed about the issue under investigation and can serve as proper source of the intended evidence.

Concerning the educational level, only 1 (25%) laboratory technician was diploma holder, 13 (59.1%), 3 (75%), 8 (66.7%) biology teachers, laboratory technicians and school principals respectively were first degree holders, 9 (40.9%) and 4 (33.3%) biology teachers school principals respectively were also second degree holders. From this, it is possible to conclude that majority of teachers and school principals had educational qualification below the required level of qualification for teaching and leading secondary schools. Regarding to the experience, 3 (13.6%) and 1 (25%) biology teachers and laboratory technicians respectively had work experience between 1- 5 years, 2 (9.1%) and 3 (75%) biology teachers and laboratory technicians respectively had work experience between 6-10 years, 1 (8.3) biology teachers and school principals respectively had work experience between 11- 15 years, 4 (18.2), 1 (8.3) biology teachers and school principals respectively had work experience between 16-20 years, 6 (27.3) and 7 (58.3) biology teachers and school principals respectively had above 20 years respectively. This implies that in most schools biology academic staff and school principals had experienced enough. Teaching experience has high contribution to students' academic achievement. Therefore, according to Kini, & Podolsky (2016), teaching experience is positively associated with student achievement gains throughout a teacher's career.

4.2. Teachers' perception towards practicing of innovative teaching strategies

Teachers' perception toward practicing of innovative teaching strategies in the secondary schools indicated as follows.

Table 4: Secondary school Biology Teachers perception towards practicing of innovative teaching strategies

N o	No. Res.t	Response options					Mea n	SD
		5	4	3	2	1		
1.	38	4	2(6/38=15.8%)	21(21/38=55.3%)	10	1(11/38=29.5%)	2.99	0.86
2.	38	5	5(10/38=26.3%)	17(17/38=44.7%)	10	10(11/38=29.5%)	3.19	1.12
3.	38	1	4(5/38=13.6%)	19(19/38 =50%)	12	2(14/38=36.8%)	2.82	0.83
4.	38	1	7(8/38=21.1%)	19(19/38= 50%)	8	3(11/38=29.5%)	2.90	0.87
5.	38	2	4(6/38=15.8%)	18(18/38= 47.4%)	10	1(14/38=36.8%))	2.89	0.95
6.	38	3	5(8/38=21.1%)	13(13/38=34.2%)	16	1(17/38=44.7%)	3.05	0.89
7.	38	5	4(9/38=23.7%)	22(22/38=57.9%)	6	1(7/38=18.4%)	3.08	0.97
8.	38	4	4(8/38=21.1%)	21(21/38= 55.3%)	8	1(9/38= 26.7%)	2.98	0.83
9.	38	4	0(4/38=10.5%)	25(25/38 =55.3%)	8	(8/38= 21%)	2.97	0.91
10.	38	4	4(8/38=21.1%)	22(22/38= 57.9%)	8	(8/38= 21%)	3.01	0.84
11.	38	4	3(7/38=18.4%)	19(19/38= 50%)	11	1(12/3= 31.6%)	3.01	0.96

Table 5: Summary of Teachers' Perception Level

Perceptions	%	Mean
Negative Perception	19.2	0.96
Moderate Perception	50.8	2.54
Positive Perception	30	1.5
Total	100	5

The results in Table 5, showed that half of the respondents had an average level of perception and nearly one third had positive perception towards practicing of Innovative method. This shows that most of Biology teachers had either moderate or positive perception towards practicing of Innovative method. Innovative teaching methods can be affected by Biology

teachers' different perceptions. Their perceptions of Innovative teaching could influence classroom practices and therefore either enhance or inhibit the development of scientific creativity in learners. The negative aspects of perceptions due to incomplete knowledge or understanding, which results in the intensification of conflict paradigms, could influence the method, Amador (2014). The information gained from interview showed that teachers have positive perception toward innovative teaching methods and their contribution to students' academic achievement. Most informant teachers raised that, however they have positive perceptions toward the methods, their practice were restricted by different scarce resources, due this, they haven't encouraged on implementing it, they said also "For instance school context organization and shortage of different facilities were raised as impeding factors made teachers to be discouraged."

As understood above quantitative data showed teachers have positive perception to benefits of innovative teaching methods and students need to learn in different project scenarios, technological laboratories and conducive-environment. The qualitative data contradict quantitative data. The informants said "even though teachers have positive perceptions to ward innovative teaching methods, traditional teaching methods were adapted while any interventions were not done in the side of both teachers and principals." Aimed to this, different scholars suggested as how practice of Innovative teaching methods can be affected by teachers perception factors. According to Vander Heijden, Beijaard, Geldens & Popeijus (2018), varies degrees of teachers' perceptions of themselves as change agents, their characteristics and how these characteristics are related to personality and contextual factors. According to Ndeke & Keraro (2020), teachers have limited understanding of classroom practices that enhance scientific creativity in their learners; however, this can be improved if their conceptualization in the classroom context is improved. There should be workshops, seminars, conferences, and mentorship activities for teachers to enable them to update their knowledge on new developments in the use of instructional materials, (Augustin, Ntezimana & Batera).

According to Fiksl, Flogie, & Aberšek (2017), set classes organized in such a way meet one of the basic conditions for acquiring high-quality knowledge and skills, from various perspectives of organizing the educational process in lower secondary school grades. French, Imms & Mahat (2020), conclude that there should be the characteristics of a successful transition of a school

from traditional classrooms to an innovative learning environment. Khairnar (2015), advocated that innovative teaching incorporates technology in to teaching learning methods to create a rich learning experience for students and a rewarding teaching experience for faculty. With the increase of the globalization, educators are required to have the ability to adapt to technological changes and meet the new needs to solve complex problems.

4.3. Practices of using/applying innovative methods of teaching at secondary schools

As showed under 4.2, practicing innovative teaching method especially in science education is prominent in the areas of the science education curriculum, teaching and learning of science. Therefore this part deals with the extent to which innovative teaching methods is being practiced in the secondary schools of Bonga Town. It contains two parts the first is responses of teachers, laboratory technicians and principals to innovative teaching practice and the second is student's response to teachers' practice.

Table 6: The extent to which Innovative teaching strategies are being practiced

No	Innovative teaching strategies	No of Respondents	Response options					Mean	SD
			5	4	3	2	1		
1	Brainstorming	38	0	4	10	22	2	2.48	0.89
2	Computer Assisted Instruction	38	2	3	13	19	1	2.62	0.91
3	Demonstration	38	3	5	10	19	1	2.72	1.01
4	Problem based learning (PBL)	38	2	5	10	19	2	2.70	0.92
5	Project Based Learning	38	2	5	16	12	3	2.7	0.82
6	Inquiry Based Learning	38	1	3	6	22	6	2.45	0.75
7	Field Trip	38	1	3	10	20	4	2.51	0.88
8	Flipped Classrooms	38	0	0	8	25	5	2.07	0.89
9	Guided Discovery	38	2	2	11	20	3	2.48	0.94
10	Peer Tutoring	38	1	4	11	19	3	2.55	0.91

The overall average mean value is 2.53

As indicated above Table 6, the results specified an average practice of using innovative teaching strategies with an overall mean of (2.53). The practicing level of strategy starting from highest to lowest mean value ranked as: demonstration (2.72), problem based learning (2.70), project based learning (2.7), computer assisted instruction (2.62), peer tutoring (2.55), field trip (2.51), guided discovery (2.48), brainstorming (2.48), and inquiry based learning (2.45) and flipped classrooms

(2.07). These values indicate that some strategies such as demonstration, problem based learning; project based learning, computer assisted instruction, peer tutoring, and field trip were moderately practiced by biology teachers. Importantly, among the teaching strategies low rated by participants some such a flipped classrooms, inquiry based learning and guided discovery and the like, characterize innovative approach in nature, and desirable these days, It follows then, that the implication of the result suggests the practices of the use or application of innovative methods of teaching in teaching biology at secondary schools surveyed was not as effective as desired

In the same vein, lesson observations were conducted with 4 teachers in order to check to what extent biology teachers were using innovative teaching methods. Accordingly, most of them were seen not using Innovative teaching strategies, but confined with traditional methods. In the post-observation interview, the teachers explained that occasionally they were using some methods like, demonstration; problem based learning (PBL), project based learning, field trip and peer tutoring. But most of them rationalized everything with obstacles such as unfavorable school environment and inadequate resources. As understood above quantitative and qualitative data gathered from teachers, laboratory technician and school principals indicated that some types of the methods explained above, were being used rarely, whereas teaching strategies like brainstorming, inquiry based learning, flipped classrooms and guided discovery were not being used.

The present study can be compared to inquiries conducted in other settings. Accordingly Nazarov (2021), reported that the implementation of a brainstorming method usually involves a group, and the group members are free to propose relevant ideas for the topics. Brainstorming contributes to the increase in students' motivation, confidence, and participation as reflected by the positive students' behavior, Unin & Bearing (2016). Charles-Organ and George, 2016 in Tofi, Achor, & Eje (2022) stated that demonstration approach involves displaying of the right instructional material, coaching the students with the aid of the instructional material to understand the concept at hand and drilling the students. According to Loiser & Endne (2022), as one of the alternative learning methods that can activate students, the demonstration method can be applied in the classroom which is expected to increase the level of thinking and experience of students, especially if students are expected to practice about a material that is

understood. Umara (2022), conclude that the results of the learning implementation showed that the ability of students increased significantly after using the demonstration method. Syafii & Yasin (2013), suggested problem based learning (PBL) was approved to help the students to achieve academic excellence especially for the biology subject. The teachers in the schools should be expert to employ PBL in the process of teaching and learning appropriately in the classroom. This is because it has already proved to be one of the best approaches in teaching. Orozco & Yangco (2016), recommended that teachers use the PBL approach in biology classes to enhance the critical and creative thinking skills of the students. Wekesa & Ongunya (2016), recommended that Project based learning technique being student centered approach, change students' attitudes towards classification positively that contribute towards improved academic performance. According to Condliffe (2017), implementing PBL is often challenging. It requires that teachers modify their roles (from directors to facilitators of learning) and that they tolerate not only ambiguity but also more noise and movement in the classroom. According to Ejeh, Adejoh, Ochu & Egbe-Okpenge (2021), biology teachers in schools should be encouraged to use field trip and discovery methods in teaching other concepts in biology. Secondary school Biology teachers are recommended to adopt field trip teaching methods. DeLozier & Rhodes (2017) stated flipped classrooms as the practice of assigning lectures outside of class and devoting class time to a variety of learning activities. According to Bishop and Verleger (2013) in Ozdamli, & Asiksoy (2016) flipped classroom is a student-centred learning method consisting of two parts with interactive learning activities during lesson and individual teaching bases directly on computer out of lesson. Mull (2012) in Ozdamli, & Asiksoy, 2016) defined it as a model that provides students prepare themselves for the lesson by watching videos, listening podcasts and reading articles. The findings indicated that flipped classroom strategies are superior to the conventional strategy in promoting cognitive achievement in biology among the students (Oyewumi, 2021). According to Chebotib, Too & Ongeti (2022), Flipped learning approaches should be embraced as a potentially valuable learning approach tool given the current shift towards learner centered and self-learning.

Guided-discovery is an instructional approach in which students discover knowledge through the guidance of a facilitator in order for the learner to reach mutually-agreed upon goals (Edoho and Abasi, 2019 in Tofi, Achor, & Eje (2022). The role of an instructor is merely to provide suitable learning environment and a guide. Ullah,Tabassum, Kaleem (2018), concluded

that peer tutoring enhances the academic achievement of students. Hence, it is an effective method of instruction for teaching biology at secondary level. They suggested that peer tutoring may be incorporated along with other teaching methodologies for the subject of biology and it may be given due consideration in all teacher education practices in the country. Ikani & Ishaku (2020), conclude that, the use of peer tutoring approach in teaching have well noted facilitative effect on students' academic achievement and interest in biology difficult concepts. The results of the students taught Biology difficult concepts using peer teaching approach have a significantly greater achievement and also exhibited higher level of interest in Biology difficult concepts than that student who is taught biology difficult concepts using conventional lecturer method.

Table 7: Students' views on teachers' use of innovative methods in the secondary schools

No	Students view on teachers practice	No of respondents	Response options					Mean	SD
			1	2	3	4	5		
1	Activity-based learning are encouraged in our school	285	55	142	43	45	0	2.28	0.95
2	Teachers are seen more as guide, facilitator and role models	285	32	129	92	15	17	2.49	0.97
3	Teachers make connections between theory and practice	285	35	93	62	55	40	2.93	1.27
4	Teachers are implementing new ideas, methods, technologies	285	40	120	79	35	11	2.50	1.00
5	Students are encouraged more to solve problems	285	68	101	80	25	11	2.37	1.02
6	Students are motivated to adapt creativity	285	93	116	46	23	7	2.08	1.03
7	Students are engaged to learn in different technologies	285	17	160	93	15	0	2.37	0.67

The overall average mean value is 2.43

As indicated above Table 7, the results specified an average mean value of Students' views on Biology teachers' use of innovative methods in the secondary schools was (2.43). Therefore, the Students' views ranked starting from highest to lowest mean value indicates as, teachers make connections between theory and practice (2.93), Implementing new ideas, methods, technologies (2.50), They are seen as guide, facilitator and role models (2.49), Students are encouraged more to solve problems (2.37), they are engaged to learn in different technologies (2.37), activity-based learning are encouraged in the school (2.28), Students are motivated to adapt

creativity (2.08). These results showed as, except making some connections between theory and practice, teachers were not effectively using practicing of Innovative teaching methods' such as, Implementing new ideas, methods & technologies, guiding and effectively facilitating the learning process, encouraging students more to solve problems, learn in technologies and adapt creativity.

Both quantitative and qualitative results from students showed that teachers' teaching styles were not scientific and Innovative and this poor teaching habit was leading the students to have lack of interest and motivation to learn. As they said, they were not encouraged to learn by different technological laboratories.

As understood above quantitative and qualitative data gathered from students showed that teachers were poorly practicing Innovative teaching methods. Aimed at this, different scholars suggested the benefits of Innovative teaching methods and the approaches need to be followed by both teachers and students were discussed. For this, Qarareh, (2016), suggested that, Learning science faces several challenges, including the idea of memorizing uncorrelated concepts, the lack of investigative activities and the use of a teaching method that does not give a chance for the student and focuses on the information as the crucial target, Zewdu (2017), recommended that, the common obstacles to the employment of innovative methods of teaching includes, lack of institutional support, and learning resources, teachers' lack of expertise, inappropriate curricular materials etc. Udu (2018), recommended that, science teaching community should make the classroom and the laboratory to be full of activities to enable the students to have first-hand knowledge of science. Nwaeze, Onuoha, & Ukogo, (2016), suggested that Teachers are no longer required to bear the full burden of the students learning but are seen more as guide, facilitator and role models that direct and steer the students towards their learning needs, the task of the teacher approach system is to actualize such a need, to form methodological competence. (Mynbayeva, Sadvakassova & Akshalova (2017). Innovative Teaching incorporates technology in to teaching learning methods to create a rich learning experience for students and a rewarding teaching experience for faculty, Khairnar (2015). Educational innovations include pedagogical innovation, scientific and methodological innovation, educational and technological innovation. (Mykhailishyn, Kondur & Serman (2018),

Table 8, Comparative analysis between teacher's perceptions towards their practice of innovative teaching methods and students' view to teach' practice

Respondents	Mean	SD
Teachers perceptions	2.99	0.91
Students views to teach' practice	2.43	0.98

As seen in above Table 8, teachers' perceptions towards practicing of innovative teaching methods was higher than students' view to teachers' practice. This indicated that even though teachers have positive perception, they were not using innovative teaching methods.

4.4. Challenges to practice Innovative teaching methods in the schools

This part deals with challenges to practice innovative teaching methods in secondary schools biology teaching at Bonga Town of Kafa Zone. Respondents (Biology teachers, laboratory technicians, and principal) were asked and the results were documented in the table 9.

Table 9: Challenges to practice Innovative teaching methods in the schools

No	Challenges to practice Innovative teaching methods	No of Respondents	Response options					Mean	SD
			1	2	3	4	5		
1	Low utilization of Electricity	38	14	17	5	2	0	1.87	0.58
2	Insufficient availability of laboratory facilities and technician	38	1	3	6	11	17	4.07	1.11
3	Inadequate Field project working places	38	1	3	5	13	16	4.16	0.95
4	Absence of Audio and video materials	38	0	1	3	14	20	4.43	0.68
5	Absence of Pedagogical center with adequate teaching aids	38	1	4	11	11	11	3.53	1.26
6	Low utilization of Internet access	38	3	3	16	10	6	3.31	1.13
7	Inappropriate seats and blackboards	38	0	4	12	12	10	3.51	0.99
8	Poor Teachers' lesson presentation	38	0	8	25	0	5	3.08	0.97
9	Students miss behavior distorts innovative learning process	38	5	4	16	7	4	2.87	1.07

The overall average mean value is 3.42

As indicated above Table 9, the results specified an average mean value of challenges resulted from inadequate provision of resources, teachers' poor presentation of lesson and students miss behaviors was (3.42). The seriousness of the problems ranked as starting from lowest to highest mean value arranged as: low utilization of electricity (1.87), Students miss behavior distorts innovative learning process (2.87), poor teachers' lesson presentation (3.08), low utilization of internet access (3.31), inappropriate seats and blackboards (3.51), absence of pedagogical center with adequate teaching aids (3.53), insufficient availability of laboratory facilities and technician (4.07), inadequate field project working places (4.16), and absence of audio and video materials (4.43)

These values indicate that utilization of electricity was not adversely affecting the practice of Innovative teaching method or there was only low related problem. But other factor such as, Students miss behavior, poor teachers' lesson presentation, low utilization of internet access,

inappropriate seats and blackboards, absence of pedagogical center with adequate teaching aids, insufficient availability of laboratory facilities and technician, inadequate field project working places and absence of audio and video materials were recognized as the major challenges to using practicing of innovative teaching methods.

Additional information gained from teachers, principals and students encourage the above idea by saying “The schools lacked enough field working places, adequate physical facilities specially laboratories”. Teachers’ bad teaching habit simply chalks and talks, inaccessibility of technology facilities all these were other cause for students’ academic underachievement on science subjects.

Both Quantitative and Qualitative data showed that, although utilization of electricity access was not challenging factor in the context of Bonga Twon secondary schools. other related factors such as Students miss behavior, poor teachers’ lesson presentation, low utilization of internet access, inappropriate seats and blackboards, absence of pedagogical center with adequate teaching aids, insufficient availability of laboratory facilities and technician, inadequate field project working places and absence of audio and video materials and other related issues were still affecting the practice of innovative teaching and students’ academic achievement. Aimed to this, different scholars suggested as how practice of innovative teaching methods can be affected by different factors and the solutions that can be taken by stakeholders and teachers. For this, Emeka, & Nyeche (2016), so far demonstrated that the use of internet contributes immensely to the academic performances of students. Jibrin, Musa & Shittu (2017), concluded that internet is one of the beneficial tools in this era of information and communication technology (ICT) used in academic exercise. Basar, Mansor, Jamaludin (2021), recommended for the government, school administrators, teachers and parents to acknowledge the importance of well-equipped facilities and a stable internet connection for effective learning. Buhatwa, (2014), recommended that there is the need to increase much effort on building more science subject laboratories with full facilities so as to increase performance to students and create conducive environment for teachers during teaching and learning process. According to Chala (2019), the main factors frequently indicated for the failure of implementation include: Large class size and lack of resources, lack of laboratories and lab equipment; lack of laboratory technicians; and large classes. Anyadiiegwu (2018), recommended also biology laboratories should be adequately

funded; staff, students and laboratory technologists/assistants should be adequately trained on proper improvisation of laboratory; appropriate storage of material resources. According to Ochieng, Education & Kenyatta, (2022), secondary schools should employ qualified laboratory technicians, to help teachers maximize laboratory utilization and improve academic achievement. The government needs to make available laboratory apparatus for all the schools, for the learners to be armed with the required expertise to carry out laboratory practical.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. SUMMARY

The purpose of this study was to assess secondary school teachers' perception and practices of using innovative methods in Biology subjects at Bonga town, kafa zone.

To address this purpose, the following basic research questions were raised:

1. What is the perception of Biology teachers' toward innovative teaching in the study sites?
2. To what extent teachers practice innovative teaching method in their schools?
3. What are the major challenges that affect the practice of innovative teaching approaches at the schools?

To this effect, the study was conducted in four secondary schools as Bishaw W/yohanis, Mehal ketema, Girazmach Pawulos and Gedam secondary schools in the year of 2016. Descriptive survey Research design was used for this study. The descriptive survey was preferred here, because the survey research design is cross-sectional for the data to be collected at one point in time. Consequently, 22 biology teachers, 4 laboratory technicians and 12 school principals were selected by purposive sampling and 292 students were selected by simple random sampling method. The data was gathered through both quantitative and qualitative tools. Accordingly, 38 copies of a questionnaire were prepared and distributed for Biology teachers, laboratory technicians, school principals and 292 copies of questionnaires for students. From these, 38 from biology teachers, laboratory technicians, school principals and 285 copies of questionnaires from students were returned back. On the other hand, interview and observation sessions were conducted with selected biology teachers, school principals and students to obtain qualitative data. The quantitative data gathered through questionnaires were tabulated and filled SPSS version 26, and analyzed with the help of percentage, mean value and standard deviation. Whereas, the qualitative data gathered through the open-ended questionnaire, interview and observation were analyzed by narration. The study revealed the following major findings

Major findings

The findings of this study demonstrated secondary school biology teachers' perception towards practicing innovative methods was moderate. Additional Qualitative data obtained from the interview indicated that teachers had positive perception towards practicing innovative teaching methods but their practice was influenced by different factors, due to this, they hadn't encouraged to implementing it. Regarding the practices of each innovative strategies both quantitative and qualitative data gathered from teachers, laboratory technician and school principals indicated that some types of the strategies like computer assisted instruction, demonstration, problem based learning (PBL), project based learning and field trip were being used rarely, whereas other teaching strategies like brainstorming, inquiry based learning, flipped classrooms and guided discovery were not being used or inappropriately used. Regarding students' view towards teachers practice, teachers had low practicing habit of innovative methods however, only a small mean value (2.43) has rated by students. These showed that even though teachers' have positive perceptions; they might lose efficiently enhancing innovative methods among their learners. Generally limited resources such as low utilization of internet access, insufficient availability of laboratory facilities, inadequate field project working places, and absence of audio and video materials, inappropriate seats and blackboards were recognized as the main challenges which were hindering the practice of innovative teaching in secondary schools.

5.2. CONCLUSION

The study result indicated, although secondary school Biology teachers valued (held positive perception towards) using innovative teaching methods, practically they only used a limited percentage of teaching strategies at their classrooms. The implication suggests, what the secondary school Biology teachers thought about application of innovative teaching methods deviate from what they were practicing in their teaching effort, it was also found that the practices of using innovative teaching strategies in biology classes were constrained by challenges such as: low utilization of internet access, insufficient availability of laboratory facilities, inadequate field project working places, absence of audio and video materials, inappropriate seats and blackboards. These findings implied that unsatisfactory practice resulted from unappropriated share of responsibilities of biology teachers, school principals and

stakeholders such as PTA to improve students' academic achievement by giving high consideration to innovative teaching methods in biology.

5.2. RECOMMENDATIONS

On the basis of the findings obtained and the conclusions drawn, the following recommendations were forwarded to improve the practice of innovative teaching methods in the secondary schools in Bonga town, Kafa zone.

1. Biology teachers need to practice different innovative approaches of teaching depending on the needs and preferences of students by identifying their learning need
2. School principals expected to create awareness for teachers regarding to the purpose and objectives of practicing innovative teaching methods is to enhance quality of education.
3. School administrative including principals and PTA need to deliver computer and internet access, in order to encourage students to engage in different technologies to acquire new experiences
4. It is recommended school administrative including principals and PTA to supply laboratory facilities, field project working places to encourage students more to solve problems through critical thinking and creativity
5. Woreda education office is also expected to allocate enough budgets for fulfilling resource like comfortable blackboard and seats
6. Bonga University and Bonga education college need to equip biology teachers with appropriate knowledge, skill and perceptions by providing short and long term training on the methodology of innovative teaching

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APPENDIX 1

Research questionnaires

JIMMA UNIVERSITY

COLLEGE OF EDUCATION AND BEHAVIORAL SCIENCE

DEPARTMENT OF TEACHERS' EDUCATION AND CURRICULUM STUDIES

Questionnaire: to be filled by secondary school Biology teachers. Lab/ technicians and principals

Dear participant my name is Asrat Haile, I am working on my MA Thesis research entitled: Secondary school Teachers' Perception and Practices of using Innovative Methods in Biology Teaching at Bonga Town of Keffa Zone. The purpose of these questionnaires therefore is to obtain authentic and relevant evidence pertinent to the study topic.

Thus, I kindly request you to involve in the study based on your interest and provide your genuine responses to the items of the questionnaire on the basis of the instructions of each part. I also assure you that the information you will provide for the study is used only for academic purpose and redistrict kept confidential.

Dear respondents bear in mind the followings:

- There is no need of writing your name.
- All information you provide will be strictly kept confidential.
- All data will be aggregated and will not personalize individual responses.

Thank you very much in advance for your Cooperation!

PART ONE- GENERAL INFORMATION □

Please indicate your response by putting “X” mark in corresponding box of your choice.

1. Sex A) Male ☐ B) Female ☐
2. Role of respondent Teacher ☐ Principal ☐ Laboratory technician ☐
3. Educational qualification A) Diploma ☐ B) First Degree ☐ C) Second Degree ☐
4. Work experience A) Below 5 ☐ B) 5 -10 ☐ C) 11 -15 ☐
D) 16 -20 ☐ E) Above 20 ☐

PART TWO: - QUESTIONNAIRES ITEMS

Dear participant, the items listed below table One, Two and Three are indicating Teachers’ practices, perceptions, and Major challenges respectively on using of innovative teaching methodology. Rate each items according to your view of their appropriateness as indicated in the table by Putting “X” mark in its corresponding column.

Keys Levels of agreement (5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1= strongly disagree,

A. . Table one:- Teachers’ practice

No	Innovative teaching methods/strategies which are being practicing in our school	Levels of agreement				
		5	4	3	2	1
1	Brainstorming					
2	Computer Assisted Instruction					
3	Demonstration					
4	Problem based learning (PBL)					
5	Project Based Learning					
6	Inquiry Based Learning					
7	Field Trip					
8	Flipped Classrooms					
9	Guided Discovery					
10	Peer Tutoring					

Please list down additional Innovative teaching methods you think are better to teach Biology effectively

Explain their Levels of practices in the school and your experience to adopt those Innovative teaching strategies above you have listed

B. Table two:- Teachers' Perception

No	Teachers' perception factors in our school	Levels of agreement				
		5	4	3	2	1
1	Teachers perceive they have to be encouraged to innovate their teaching methods in science classrooms					
2	Teachers feel efforts are made to integrate educational technologies in Biology teaching					
3	Teachers want Students be encouraged to influence the ways in which they are taught					
4	Teachers consider Students' science subject learning progress in general and Biology in particular applies innovative assessment strategies					
5	Teachers feel happy to Students' interests are being realizing though their learning is connected to creativity					
6	Teachers believe Students are made to learn Biology in laboratories					
7	Teachers expect their Students to work at different project scenarios					
8	Teacher believe Innovative teaching method contributes to students' academic achievement					
9	Teachers have hope students prefer innovative rather than lecture teaching methods					
10	Teachers perceive students should benefit from innovative teaching method					
11	Teachers believe Innovative teaching methods are generating solutions for problems encountered in life					

Please give additional teachers perceptions you think are determiner to the secondary school Biology subject effective teaching

A. Table Three:- Challenges

No	Indicators of major challenges to practice Innovative teaching methods	Levels of agreement				
		5	4	3	2	1
1	Low utilization of Electricity					
2	Insufficient availability of laboratory facilities and technician					
3	Inadequate Field project working places					
4	Absence of Audio and video materials					
5	Absence of Pedagogical center with adequate teaching aids					
6	Low utilization of Internet access					
7	Inappropriate seats and blackboards					
8	Poor Teachers' lesson presentation					
9	Students miss behavior distorts innovative learning process					

Please give additional factors you think is hindrance to the secondary school Biology subjects Innovative teaching.

Explain the solution how to solve the problems as you are professional to the subject matter as well as teaching methodology

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DEPARTMENT OF TEACHERS' EDUCATION AND CURRICULUM STUDIES

Questionnaire: to be filled by secondary school Students

Dear participant my name is Asrat Haile, I am working on my MA Thesis research entitled: Secondary school Teachers' Perception and Practices of using Innovative Methods in Biology Teaching at Bonga Town of Keffa Zone. The purpose of this questionnaire therefore is to obtain authentic and relevant evidence pertinent to the study topic.

Thus, I kindly request you to involve in the study based on your interest and provide your genuine responses to the items of the questionnaire on the basis of the instructions of each part. I also assure you that the information you will provide for the study is used only for academic purpose and redistrict kept confidential.

Dear respondents bear in mind the followings:

- There is no need of writing your name.
- All information you provide will be strictly kept confidential.
- All data will be aggregated and will not personalize individual responses.

Thank you very much in advance for your Cooperation!

PART ONE:- GENERAL INFORMATION

Please indicate your response by putting “X” mark in corresponding box of your choice.

1. Sex of respondent A) Male ☐ B) Female ☐
2. Age of respondent A) Below 14 ☐ B) 15 -18 ☐ C) Above 18 ☐
3. Grade level A) Grade 9- 10 ☐ B)) Grade 11-12 ☐

PART TWO: - QUESTIONNAIRES ITEMS

Dear participant, the items listed below table are indicating School context organization and facilities on using of innovative teaching methodology. Rate each items according to your view of their appropriateness as indicated in the table by Putting “X” mark in its corresponding column.

Key:- Levels of agreement (5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1= Strongly disagree,

No	Students view on teachers practice	Levels of agreement				
		5	4	3	2	1
1	Activity-based learning are encouraged in our school					
2	Teachers are seen more as guide, facilitator and role models					
3	Teachers make connections between theory and practice					
4	Teachers are implementing new ideas, methods, technologies					
5	Students are encouraged more to solve problems					
6	Students are motivated to adapt creativity					
7	Students are engaged to learn in different technologies					
8	Activity-based learning are encouraged in our school					
9	Teachers are seen more as guide, facilitator and role models					

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OBSERVATION CHECKLIST GENERAL FRAMEWORK

This observation checklist is prepared to collect data on “secondary school teachers’ perception and practices of using innovative methods in Biology teaching at Bonga Town’. The checklist will be filled by the researcher during classroom observation. You are kindly requested to provide as accurate, recent and relevant information as possible. The information you give for the researcher during the observation will be used only for the research purpose and hence remain confidential. Your names and personal information will not be disclosed to any other third party. Thank you in Advance!

Observation Checklist

No	Classroom organization and Teachers practice	Excellent	Very good	Good	Poor
A	Teaching Facilities and organization observation				
1	Utilization of Electricity				
2	Internet access				
3	Availability of sufficient and efficient laboratory technician				
4	Availability of Laboratory room with equipment				
5	Adequate Field project working places				
6	Availability of Audio and video materials				
7	Pedagogical center with adequate teaching aids				
8	Attractive school compound				
9	Appropriate Seats and blackboards				
B	Classrooms observation				
1	Classroom organization				
2	Teachers’ lesson plan preparation				
3	Teachers’ efficiency using innovative method				
4	Teachers’ emphasizes for continuous feedback				
5	Teachers’ discipline and intimacy with the learners				
6	Teachers act as facilitator for students creativeness				
7	Teachers’ efficiency in providing practical learning				

APPENDIX 2

Research questionnaires by Amharic

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በባዮሎጂ መምህራን፣ ላቦራቶሪ ባልሙያዎች እና ርዕሳነ መምህራን የሚሞላ የጽሁፍ መጠይቅ

ውድ የጽሁፍ መጠይቁ ተሳታፊ የሆኑ የትምህርት ባለሙያ! እኔ የቦንጋ መምህራን ትምህርት ኮሌጅ መምህርና በጂማ ዩኒቨርሲቲ የ“Curriculum Studies and Instruction” የ2ኛ ድግሪ ተመራቂ ሲሆን “Secondary school Teachers’ Perception and Practices of using Innovative Methods in Biology Teaching” በሚል ርዕስ የማሟያ ምርምር በማዘጋጀት ላይ እገኛለሁ።

ስለሆነም እርስዎ የሚሰጡኝ መረጃ ትልቅ ዋጋ ያለው ስለሆነ ትክክለኛውን መረጃ በመሰጠት የበኩልዎን ሚና እንዲጨመር በአክብሮት እየጠየኩ መጠይቆቼን በጥሞና ካነበቡ በኋላ በተስማሙበት ቁጥር ትይዩ ላይ በተዘጋጀው ክፍት ሳጢን ወይም ሰንጠረዥ ውስጥ የ“X” ምልክት በማድረግ በሀሳቡ መስማማትዎን ያረጋግጡልኝ። በስተመጨረሻም በእኔ ሀሳብ ብቻ እንዳይገደቡ በምል እሳቤ ባዘጋጀሁት ክፍት ቦታ ላይ ተጨማሪ ሀሳብዎትንና አስተያየትዎን ይፃፉበት።

ውድ ጊዜዎትን ስለሰጡኝ አመሰግናለሁ!

አስራት ሀይሌ

ክፍል አንድ:- ጠቅላላ መረጃ

1. ፆታ ወንድ ☐ ሴት ☐
2. የሥራ ህላፊነት መምህር ☐ ር/መምህር ☐ የላቦራቶሪ ባለሙያ ☐
4. አገልግሎት ከ5 ዓመት በታች ☐ 5-10 ☐ 11-15 ☐ 16-20 ☐
ከ20 ዓመት በላይ ☐
5. የትምህርት ደረጃ ድፕሎማ ☐ የመጀመሪያ ድግሪ ☐ ሁለተኛ ድግሪ ☐

ክፍል ሁለት:- የጽሁፍ መጠይቅ

ከዚህ በታች እንደተመለከተው የአዳዲስ ሀሳቦች ማስተማሪያ ዘዴዎች /Innovative teaching methodologies/ ተቅም በ2ኛ ደ/ት/ቤት ባውሎጂ ትምህርትን የማስተማር ትግበራና በስነ-ዘዴው ላይ መምህራን ያላቸው አረዳድ እና በትግበራ ላይ የሚታዩ ማነቆዎችን በሚመለከት በሦስት በተለያዩ ሰንጠረዦች ውስጥ ለተመዘገቡ ዝርዝር አመለካከቶች እርስዎ በተስማሙበት ቁጥር ትይዩ ላይ በተዘጋጀው ክፍት ቦታ ላይ የ“X” ምልክት በማድረግ መስማማትዎን ያረጋግጡልኝ።

መፍቻ :-የስምምነት ደረጃን በሚመለከት

5= በጣም እስማማለሁ፣ 4= እስማማለሁ፣

3= አልወሰንኩም፣ 2= አልስማማም፣ 1= በጣም አልስማማም ማለት ነው።

ሰንጠረዥ አንድ:- የመምህራን ትግበራ

በሰንጠረዥ የተመለከቱ የማስተማሪያ ስነዘዴዎች በት/ቤተዎ በምን ያህል ደረጃ እንደሚተገበሩ የ“X” ምልክት በማድረግ ይጠቁሙ

No	አዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎች /Innovative teaching methodologies/	የስምምነት ደረጃ				
		5	4	3	2	1
1	Brainstorming (ተማሪዎች በቡድን ቡድን ተከፋፍለው በተሰጣቸው ርዕሴ ጉዳይ ላይ እንዲመራመሩበት በማድረግ የማስተማር ዘዴ)					
2	Computer Assisted Instruction (በኮምፒውተር በመታገዝ የማስተማር ዘዴ)					
3	Demonstration (በተግባር እያሳዩ የማስተማር ዘዴ)					
4	Problem based learning (ለችግሮችንና ጥያቄዎችን መነሻ በማድረግ መፍትሔ እየሰጡ የማስተማር ዘዴ)					
5	Project Based Learning (በፕሮጀክት ሥራ ልምምድ የማስተማር ዘዴ)					
6	Inquiry Based Learning (ተማሪዎች ገሐዱን ዓለም በሚረዱበት መልክ የማስተማር ዘዴ)					
7	Field Trip (የመስክ ጉብኝት በማድረግ የማስተማር ዘዴ)					
8	Guided Discovery (መምህሩ እየመራ በጉብኝት የማስተማር ዘዴ)					
9	Flipped Classrooms (ተማሪዎች በክፍል ውስጥና በተደራጁ በጥምር ዘዴዎች የማስተማር ዘዴ)					
10	Peer Tutoring (ተማሪዎች እርስ በርስ እንዲማማሩ በማድረግ የማስተማር ዘዴ)					

ለ2ኛ ደረጃ ት/ቤት ተማሪዎች ባዮሎጂ ለማስተማር የተሻለና ተማሪዎችን ለፈጠራና ችግር ፈችነት ይገፋፋል ብለው የሚያስቡት ተጨማሪ የተሻለ ማስተማሪያ ስነዘዴ ካለ ይጥቀሱ

ከላይ የጠቀሷቸው የማስተማሪያ ስነ ዘዴዎች በት/ቤትዎ በምን ያህል ደረጃ ተግባራዊ እየተደረጉ እንዳሉ ያብራሩ

ሰንጠረዥ ሁለት:- የመምህራን አረዳድ

በአዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎች /Innovative teaching methodologies/ ላይ የራስዎና የሌሎች መምህራንን አረዳድ እንዴት ነበር?

በቁጥርዎቹ ትይዩ የ“X” ምልክት በማድረግ ሀሳብዎትን ይግለጹልኝ።

ተ/ቁ	የት/ቤታችን መምህራን አረዳድ ና እይታ	የስምምነት ደረጃ				
		5	4	3	2	1
1	የት/ቤታችን ሳይንስ መምህራን ትምህርታቸውን ለማስተማር የሚረዱ አዳዲስ የማስተማሪያ ስነዘዴዎችን የመፍጠር ተነሳሽነት ይታይባቸዋል					
2	የባውሎጂን ትምህርት ከተክኖሎጂ ጋር ለማቀናጀት የሚረዱ አቅሞች በት/ቤታችን ተፈጥረዋል					
3	በት/ቤታችን ተማሪዎች በተማሩበት መንገድ ተጽዕኖ እንዲፈጥሩ ይበረታታሉ					
4	የት/ቤታችን አጠቃላይ የሳይንስ ትምህርቶች፣ በተናጠል ደገሞ የባውሎጂ ትምህርት መሻሻል በአዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎች ውጤቶች ናቸው።					
5	የመማር ማስተማርን ሥራ ከፈጠራ ሥራዎች ጋር በማቆራኘት የት/ቤታችን ተማሪዎች ፍላጎት እውን ይደረጋል።					
6	የት/ቤታችን ተማሪዎች በላቦራቶሪዎች እንዲማሩ ይደረጋል።					
7	የት/ቤታችን ተማሪዎች በተለያዩ የፕሮጀክት አማራጮች እንዲሰሩ ይጠበቃሉ					
8	አዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎች ለተማሪዎች ውጤት መሻሻል ትልቅ ዋጋ አለው ብዬ አምናለሁ					
9	በእኔ እይታ ተማሪዎች ከገለፃ የማስተማር ስነዘዴ ይልቅ በአዳዲስ ሀሳቦች የማስተማር ስነዘዴዎችን ይመርጣሉ					
10	በእኔ እይታ ተማሪዎች በአዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎች ትርፋማ መሆን አለባቸው					
11	አዳዲስ ሀሳቦችና የማስተማሪያ ዘዴዎች በህይወት ውስጥ ለሚገጥሙ ችግሮች መፍትሔ አመንጪዎች ናቸው የሚል እምነት አለኝ					

በአዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎች /Innovative teaching methodologies/ ተግባራዊ ከማድረግ አንጻር በሰንጠረዡ ውስጥ ከተጠቀሱት የተለየ የመምህራን እይታና አረዳዶች ካሉ ይጥቀሱ

ሰንጠረዥ ሦስት፡- ተግዳሮቶች

መምህራን በአዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎችን /Innovative teaching methodologies/ በት/ቤትዎ ተግባራዊ እንዳያደርጉ የሚስተዋሉ ተግዳሮቶችና የተጽዕኖ ደረጃቸውን ለመለየት የ“X” ምልክት በማድረግ ያሳዩ

ተ/ቁ	የት/ቤታችን ዋና ዋና ተግዳሮቶች	ምን ያህል ይስማማሉ?				
		5	4	3	2	1
1	የኤሌክትሮኒክ አቅርቦት ዝቅተኛ መሆኑ					
2	ብቁ ያልሆኑ የላቦራቶሪ ክፍሎች፣ መሳሪያዎችና ባሙያዎች መኖር					
3	ለሠረዳ ማሳያ ሥራዎች የተዘጋጁ በቂ ቦታዎች አለመኖር					
4	የአዲሱና ሺዲዮ መሣሪያዎች በበቂ ሁኔታ አለመኖር					
5	በቂ የትምህርት መሳሪያዎችን የያዘ የትምህርት ማዕከል አለመኖር					
6	ኢንተርኔት በበቂ ሁኔታ አለመኖር					
7	የተማሪዎች መቀመጫዎችና መጻፊያ ሰሌዳ ምቹ አለመሆን					
8	የመምህራን ማሳተሚያ ስነዘዴ ደካማ መሆን					
9	የተማሪዎች ብልሹ ስነምግባር በማስተማር ላይ ተጽኖ መፍጠር					

በአዳዲስ ሀሳቦችና ማስተማሪያ ዘዴዎችን /Innovative teaching methodologies/ ተጠቅሞ ለ2ኛ ደረጃ ት/ቤቶች የባዮሎጂ ትምህርት ለማሳተሚያ ተጨማሪ ተግዳሮቶች ናቸው የሚሏቸውን ይጥቀሱ

ለተጠቀሱ ችግሮች የመፍትሔ አስተያየቶችን ይጥቀሱ

JIMMA UNIVERSITY
COLLEGE OF EDUCATION AND BEHAVIORAL SCIENCE
DEPARTMENT OF TEACHERS' EDUCATION AND CURRICULUM STUDIES
በተማሪዎች የሚሞላ

ውድ የጽሁፍ መጠይቁ ተሳታፊ ተማሪ! እኔ የቦንጋ መምህራን ትምህርት ኮሌጅ መምህርና በጂማ ዩኒቨርሲቲ የ“Curriculum Studies and Instruction” የ2ኛ ድግሪ ተመራቂ ሲሆን “Secondary school Teachers’ Perception and Practices of using Innovative Methods in Biology Teaching” በሚል ርዕስ የማሟላጽ ጽሁፍ በማዘጋጀት ላይ እገኛለሁ።

ስለሆነም እርስዎ የሚሰጡኝ መረጃ ትልቅ ዋጋ ያለው ስለሆነ ትክክለኛውን መረጃ በመሰጠት የበኩልዎን ሚና እንዲጨው በአክብሮት እየጠየኩ መጠይቆቼን በጥሞና ካነበቡ በኋላ በተስማሙበት ቁጥር ትይዩ ላይ በተዘጋጀው ክፍት ቦታ ላይ የ“X” ምልክት በማድረግ መስማማትዎን ያረጋግጡልኝ።

ውድ ጊዜዎትን ስለሰጡኝ አመሰግናለሁ!
 አስራት ሀይሌ

ክፍል አንድ:- ጠቅላላ መረጃ

1. ዕድሜ A) ከ14 ዓመት በታች ☐ B) 15 -18 ☐ C) ከ18 ዓመት በላይ ☐
2. ጾታ A) ወንድ ☐ B) ሴት ☐
3. ክፍል ደረጃ A) 9ኛ ☐ B) 10ኛ ☐ C) 11ኛ ☐ D) 12ኛ ☐

ክፍል ሁለት: - የጽሁፍ መጠይቅ

ፍንጭ:- 5= በጣም እስማማልሁ፣ 4= እስማማልሁ፣ 3= አልወሰንኩም፣ 2= አልስማማም፣ 1= በጣም አልስማማም

ተ/ቁ	በመምህራን ትግበራ ላይ የተማሪዎች እይታ	የመስማማት ደረጃዎች				
		5	4	3	2	1
1	በት/ቤታችን የተለያዩ ሙከራዎችን መሠረት ያደረጉ ትምህርቶች ይሰጣሉ					
2	መምህራኖቻችን ለትምህርታችን መሪዎች፣ አመቻችና ምሣሌዎች ናቸው					
3	መምህራኖቻችን ትዎርን ከተግባር ጋር ያገናኛሉ					
4	መምህራኖቻችን አዳዲስ የማስተማር ዘዴዎችን፣ ሀሳቦችንና ተክኖሎጂዎችን ተግባራዊ ያደርጋሉ					
5	በት/ቤታችን ተማሪዎች በችግር ፈቺ የማስተማር ስነዘዴ እንዲሞሩ ይበረታታሉ					
6	ተማሪዎች የተለያዩ ፈጠራዎችን መሠረት ባደረጉ ስነዘዴ እንዲሞሩ ይበረታታሉ					
7	በት/ቤታችን ተማሪዎች በተክኖሎጂዎች እንዲሞሩ ይገፋፋሉ					