Research Topic:

Teacher perceptions of project-based learning. A case study of teachers at Nyava High school in Bindura district.

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Research project entitled “TEACHER PERCEPTIONS OF PROJECT-BASED LEARNING. A CASE STUDY OF TEACHERS AT NYAVA HIGH SCHOOL IN BINDURA DISTRICT” submitted by Chomunorwira Tafara in partial fulfilment of the requirement for a degree of Master of Science Education in Mathematics.

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DECLARATION

I declare that “Teacher perceptions of project-based learning. A case study of teachers at Nyava high school in Bindura district” has not been submitted before for any degree or examination in any other University and that all the sources used or quoted have been indicated and acknowledged as complete references.

Name: Chomunorwira Tafara          Date: Sept 2018

Signed……………………..
DEDICATION

To my loving wife, Marvelous Chomunorwira and our son Kudzaishe Ebenezer.

You are always the best

I love you...
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I would like to thank my family and friends for their moral and financial support during the studies. Special thanks go to my dissertation supervisor Dr. M. R Nyakahadzoyi for his astounding guidance tips and intellectual support. I would also like to thank Mr. M Gwangwawa my workmate for his interest and encouragement and for making everything possible. Credit also goes to teachers at Nyava high school for working with me and above all the LORD ALMIGHTY for guiding me throughout my endeavour to accomplish the results of this study.

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Abstract

Project-based learning is a student-centred, teacher-facilitated teaching approach that organises learning around projects. It increases students’ motivation to learn and prepares them for the 21st century demands through developing real-world experience. Many researchers have investigated teachers’ perceptions regarding project-based learning, however, no similar research was conducted in Bindura and it had remained unclear how Bindura district teachers perceive project-based learning. This study attempts to fill in the existing gaps of knowledge and practice in education. The purpose of this study is to explore Nyava high school teachers’ perceptions of project-based learning. It is a qualitative case study. The sample consisted of five teachers at Nyava high school in Bindura district. Semi-structured interviews were conducted with teachers. The collected data was coded and analysed using thematic analysis. The study revealed that the participant teachers perceived project-based learning as a beneficial teaching approach that has the potential to increase student engagement and help learners to have a deep understanding of subject matter through self-learning and learning by doing. The advantages of using project-based learning identified by the study were improved teacher-student relations, improved relationship among learners, and acquisition of skills and identification of authentic real-world challenges. The study recommended project-based learning in every subject area as well as learning courses and training for teachers on project-based learning. It is considered that findings of this study would improve students’ motivations and equip teachers with necessary skills to successfully implement project-based learning.
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CHAPTER ONE

1.0 Introduction

The research study is about teacher perceptions regarding project-based learning at Nyava high school. This chapter includes background of the study, statement of the problem, purpose of the study, research questions, sub questions, significance of the study, assumptions of the study, definition of key terms, limitations and delimitations of the study.

1.1 Background of the study

Zimbabwe’s education system has a long history, dating from the colonial period which was mainly centred along racial lines (Conrad, 2015). After independence, the new government introduced policies to redress the past. In 1999, the government set up a commission of inquiry “The Nziramasanga Commission”. This was tasked to consult the Zimbabwean people about their educational needs as well as areas of concern that should be revisited. The second task was to visit other countries and study their educational systems in order to learn from their experiences. The commission compiled report recommendations which it submitted to the government in 1999. Unfortunately there has not been effective implementation of these recommendations for about seventeen years.

It is only recently (2014) that the government has sought to fully implement the findings of the commission. One such recommendations of the Nziramasanga Commission of inquiry was the need to introduce an educational system which produce creative, innovative learners as well as critical thinkers. The commission
also recommended the need for educators to teach beyond mastery of content and do away with traditional teaching methods.

The new curriculum (2017-2022) adopted by the government has one of its requirements for the continuous assessment that learners carryout project-based learning in their respective learning areas. Project-based learning is not only done in Zimbabwe but in many other countries such as Japan. The advantages of project-based learning are many and include but are not limited to the following:

- It gives hands on approach to learners.
- It gives a realistic approach to problem solving.
- Promotes support, understanding, and respect among students, creating a pleasant collaborative atmosphere in the classroom.

There have been a lot of research on project-based learning as reported in media and academic circles. However, significantly fewer studies have addressed teachers’ views on the efficacy of the project-based learning approach. It is against this background that this study seeks to explore teacher perceptions of project-based learning.

1.2 Statement of the problem

With the accelerating pace of the current world, contemporary educators are expected to adapt and rise to changes and new challenges in education. The 21st century requires educators to use new ways of learning and teaching that will provide students more freedom in the expression of their ideas. Project-based learning seeks to replace traditional academic strategies of memorization and
passive learning by more active student-centred learning. However, this kind of shift requires a new type of approach that is geared towards student-centred learning. Project-based learning has emerged as one of the most prominent approaches for responding to these needs and demands and has gained much attention.

The lack of student engagement in learning is also of importance. Moreover, the literature shows that student engagement is perceived as a predictor of academic achievement (Williams, 2003). This might suggest that in order to raise the academic success of Zimbabwe students, there is need to increase their motivation to learn.

Project-based learning gives them the excitement of learning and raise their interest in solving real-world problems (Bell, 2010). Moreover, learners get to enjoy the learning process, as it includes the focus of their interests and allows them to learn by applying a hands-on approach. The important point is that students will have a chance to deeply understand the subject content through gaining real-life experience (Harrigan, 2014).

Project-based learning is presented as an effective student-centred learning method with a variety of benefits for students despite imposing some few difficulties for learners. Many studies on teacher perceptions about project-based learning seem to attest to that. However, to date, such views on project-based learning have been based mostly on international experience, and there is a shortage of research.
reflecting the Zimbabwean context. It remains unclear how Zimbabwe teachers understand project-based learning, and the benefits and challenges of using project-based learning they identify for their students. Therefore, this study seeks to fill the gap in literature about the application of project-based learning in Zimbabwe.

1.3 Purpose of the study

The main purpose of this qualitative study is to explore teacher perceptions of project-based learning at Nyava high school in Bindura district and to identify teachers’ role and learners’ role in project-based learning in order to highlight the needs related to project-based learning, to shed light on to the development of pedagogy and to provide a basis for designing further studies on the implementation of project-based learning.

1.4 Research question

This research sought to address the question.

What are teacher perceptions of project-based learning at secondary school level in Zimbabwe?

1.4.1 Sub-questions

In particular, the study sought answers to the following sub-questions.

1. What are teachers’ perceived roles in project-based learning?
2. What are teachers’ perceived learner roles in project-based learning?
3. What are teachers’ perceptions of authentic classroom problems for the learners?
4. What are teachers’ perceived benefits of using project-based learning?

1.5 Significance of the study

The results of this study could be beneficial to teachers, as they would help them reflect on their own practices in using project-based learning. Interpretation of teachers’ points of view, experiences, and attitudes towards project-based learning could provide insight into the challenges that both teachers and students face. It will be helpful as their voices would be heard by the school administration, who would have the opportunity to think of the most effective methods and ways of overcoming the challenges in using project-based learning.

A deeper understanding of teachers’ perceptions about project-based learning will definitely contribute to a better implementation of this teaching approach in the future and help teachers to better instruct their students when working on projects and help them gain all the necessary skills for developing the project and working collaboratively in a project team. Teachers will have the opportunity to succeed as effective facilitators of project work activities (Yezhitskaya, 2014). Moreover, teachers would likely have better contact with every student and get the opportunity to learn from students and from each other (Nicola & Allison, 2014). While both teachers and students benefit from using project-based learning, it would also be beneficial to the whole community, as students with a better understanding of project-based learning implementation are more likely to be successful in different academic endeavours.
The results of this work would motivate and provide insight for policy makers in Zimbabwe to deeply investigate project-based learning as an alternative teaching and learning strategy that is likely to improve students’ motivation and academic achievement.

1.6 Assumptions of the study

The main assumptions of the study are:

➢ Teachers are aware of the fact that their role have shifted to that of a facilitator, instead of a more traditional role.
➢ Teachers are willing to participate.

1.7 Definition of key terms

Project-based learning: a student-centred, teacher-facilitated approach that organizes learning around projects (Bell, 2010; Thomas, 2000). It is an educational approach that present learners with authentic problems which require them to work using problem-solving and research skills to find solutions. A driving question guides the multidisciplinary inquiry, as does the teacher who serves as facilitator and advisor. Often real experts from the field are asked to present or share information and technology tends to be a valuable tool in the learning process (Bender, 2012).

1.8 Limitations

The study will be carried out within a limited duration and as a result it is limited in its coverage of the district under consideration. The study is limited to a group of five teachers from five school departments at Nyava high school in Bindura district.
and it is a context-based study, therefore, the results cannot be generalised. In the study, data will be collected by interviews. Other data sources such as observation and documents will not be used.

1.9 Delimitations

The study seeks to explore teacher perceptions of project-based learning. It will be carried out at Nyava high school with five teachers from the five teaching departments at the school.

1.10 Summary

This chapter gave an outline of the problem at hand and the rationale for undertaking the study. The researcher’s main focus is on exploring teacher perceptions on project-based learning in Zimbabwe. In order to gather information pertaining to teacher perceptions on project-based learning, a case study of teachers at Nyava high school in Bindura district will be used.

The chapter to follow is going to look at literature related to the four outlined research questions.
Chapter Two

2.0 Literature review

The chapter reviews literature on teachers’ perceptions of project-based learning as a teaching approach. In this chapter, the conceptual framework, definition of project-based learning, history and development of project-based learning, teacher perceived roles, teachers’ perceived learner roles in project-based learning, teachers’ perceptions of authentic classroom problems for the learner and perceived benefits for using project-based learning are described.

2.1 Conceptual framework of the study

The study is informed by two theories namely the experiential learning theory and the constructivist theory. The experiential learning theory by John Dewey and Jean Piaget states that people learn through experience (Kolb and Kolb, 2012). Dewey (1897) believes that education must be conceived as a continuing reconstruction of experience. This experience is gained by active learning, thinking, feeling and perceiving. The experiential learning is considered as the result of the interaction between the human and his or her environment (Kolb and Kolb, 2012).

According to Harrigan (2014), the experiential learning theory served as the basis for the development of the constructivist theory, which states that learners do not acquire knowledge but actively construct it themselves. This theory was developed by Jerome Bruner, John Dewey, Lev Vygotsky and many other scholars. Constructivists claim that learners do not transfer ready knowledge from outside
but create their own meaning and interpretation of the world through gained experience (Ertmer and Newby, 1993).

Harrigan (2014) states that both experiential learning and constructivist theories lead to the theoretical foundations of project-based learning. Project-based learning “provides a framework for cohesively combining a series of educational strategies” (Baumgartner and Zabin, 2008, p. 98). The current research focused on Nyava high school teachers’ perceptions of project-based learning in order to explore the various benefits of using project-based learning.

2.2 Definition of project-based learning

Project-based learning has been described by different authors in many ways. Therefore, there is no single definition for this term and no common agreement has yet been reached (Bas, 2011). Thomas (2000) states that project-based learning is a model that organizes learning around projects. It can be different tasks with questions and problems that involve students in problem solving and investigative activities. According to Solomon (2003), project-based learning is all about learning through experiences. Kubiatko and Vaculova (2009) believe that “project-based learning is an instructional method centred on the learner” (p. 66). It gives students the opportunity to work on a problem and investigate the topic deeply through learning more about it (Harris and Katz, 2007). Bell (2010) also states that project-based learning is an instructional method that is focused on the learner who is guided by a teacher during all the steps of the project.
In project-based learning, students are at the centre of learning who are learning actively to improve their competences. Project-based learning has been widely recognised as collaborative, progressive, student-centred, interactive, active and a deep learning approach. According to Doppelt (2003), project-based learning is a method that helps to create a pleasant and flexible learning environment for students that will improve their skills and instil thinking competencies. It can also be viewed as a strategy that motivates students to explore something new by integrating knowledge from already existing subjects. Furthermore, project-based learning is considered as an educational strategy that engages and motivates students in finding answers by themselves (Kolmos, 2007). For this study, the definition of project-based learning by Bell (2010) and Thomas (2000) will be used that is project-based learning is a student-centred, teacher-facilitated approach that organises learning around projects.

Thus, there is no single definition for the term project-based learning. However, the main idea of project-based learning is that it is a project work learning strategy that motivates students in their own learning, provides them with the opportunity to work in teams, and helps them gain necessary skills by solving real-world problems.

2.3 History and development of project-based learning

For the past three decades, project-based learning has become an independent educational method due to huge developments in learning theories (Coffey, 2008).
However, it is not a new idea, and has been used in the learning process for many years (Thomas, 2000). The history of project-based learning can be traced back to ancient times. De Graaff and Kolmos (2007) argue that a Confucian view on education represents early aspects of project-based learning.

The modern view on project-based learning takes its roots in the educational philosophy of the American philosopher and educator, John Dewey, who first proposed project-based learning in 1890s (Douglas and Stack, 2010). Dewey expanded the concept of learning by doing. He argued that students should be actively involved in real-world problems in order to improve their personal skills and abilities. His idea was about active inquiry resulting in deeper understanding of the problem (Krajcik and Blumenfeld, 2006). His views helped shape other theories and concepts such as William Heard Kilpatrick’s project-based instruction which is composed of steps such as planning, purposing, executing and judging (Bas, 2011). Moreover, he suggested that projects could be used in different subjects to provide students with a wide diversity of ideas and concepts (Kubiatko and Vaculova, 2009).

According to Wertsch (1985), there is also a Vygotskian perspective regarding project-based learning. Vygotsky suggested that students learn best through social interaction and there is a need to get out of their comfort zone by doing more difficult tasks. The experiential learning concepts of both Dewey (1938) and Vygotsky (1987) led to the development of project-based learning principles.
(Habok and Nagy, 2016). Although it seems that project-based learning had a long history of development, Bas (2011) states that it is still in the developmental stage, and can have many improvements in the future. Nevertheless, it is important to note that the foundation of project-based learning is based on learning through experience and interaction with others.

2.4 Project-based learning steps

Research has shown different number of steps of project-based learning

The stages are as follows:

1. Skill competences debriefing, which aims to make students have an understanding about the expected outcome capabilities, have a high motivation because their project task to be solved in the real-world, have an understanding of the concept of teaching material, and have the skills of essential learning content conducted. It is at this stage when driving questions help to initiate and focus the inquiry. Larmer (2009) suggested that, the teacher needs to help focus the teaching and learning, and driving questions help with that. Driving questions creates interest and a feeling of challenge so that students think. Nizwardi’s project-based learning model of (2017) suggested that, at this stage, there is contextual teaching and learning which he defines as a conception of teaching and learning that helps teachers relate subject matter content to real world situation; and motivates student to make connections between knowledge and its applications to their lives as family members, citizens, and workers; and
engage in the hard work that learning requires. Project-based learning puts a motivating and meaningful real-world task at the centre of the student’s attention. A more recent research study by Tran (2014) on project-based learning revealed that, students need to be directed to discuss the problems which emerge in their environment. The role of the teacher is to instruct students to study modules and guide them in a class discussion. Students must be involved actively in discussions about materials being studied.

2. Project work, Danko (2006) highlighted that, at this stage, there is skills training which intend to make students master the essential content of the technical or operational machinery of the subjects taught and debriefing practice skills before students carry out project tasks. The teacher and students discuss and identify real-world problems that arise in areas where the school or college is located. The argument is that students should strive in an environment centred on learning instead of on teaching. Identifying potential areas can be done through surveys, interviews with certain society and student about problems that arise in each area (Markham, 2012). Students identify real problems to pursue and they investigate them. From some of the problems that arise in areas that have been identified, a teacher with students select and define what the real-world issues that will be serves as the theme of the project tasks. Students discuss what products to be offered in order to solve a problem in the area or to produce an innovative product that can be worth economically, and take decision about
the products that will be their project. The role of the teacher at this stage is to become a mentor, tutor, supervisor and evaluator to allow students to carry out the learning process through inquiry process and constructing work on project tasks they are doing. Jones (2005) asserts that, in executing project tasks, students work in accordance with the estimated production activities, safety priority, solid teamwork and consultation with teachers if any problems are found.

3. Evaluation, aims to reveal the achievement of the learning process and students competences, so that it becomes a matter for assessment and evaluation. From his project-based learning model, Nizwardi (2017) founded that, at this stage, student present the process of the work and results of the project tasks at a seminar in the classroom at the end of the project, and there will be discussions between teachers and students about the deficiencies in the process and the results of projects that have been implemented. Assessment is carried out by the teacher during the learning activities at each step of project-based learning, with the aim to measure the progress of student competences (Jones, 2005). Assessment as part of classroom activities is a fundamental process required to promote learning and ultimately achievement. Project are an ideal vehicle for inviting students to demonstrate their understanding through a broad-based assessment approach. Thus, teacher evaluation has to figure out the students progress,
step by step of learning process and draw the portfolio the student competence being achieved (Markham, 2012).

2.5 Teachers’ perceived roles in project-based learning

Constructivists have spelt out different roles of the teacher in a project-based learning class. Teachers assume the role of a facilitator and guide, and they can also provide scaffolding in project-based learning. Teacher guidance is commonly claimed to be important in the implementation of project-based learning (Grant, 2002). This is difficult to accomplish unless teachers receive adequate training (Bell, 2010). Besides theoretical training, teachers also need practical training to be able to fully exploit the potential of this method. (Wu and Meng, 2010). Tall (2006) recorded examples of good practises and identified teacher skills as a predictor of the success of project-based learning.

In project-based learning, the flow of knowledge moves from the teacher to the students. The teacher assume the role of a facilitator of the learning experience as well as content advisor and not the content expert, guiding the students in their exploration, innovation, research and synthesis (Stone, 1998). Bender (2012) highlighted that the best way to understand the role of the student in project-based learning is to understand how the role of the teacher changes. In project-based learning, the teacher’s role moves from content deliverer to content guide, from lecturer to facilitator. Mergandoller and Larmmer (2006), in their project-based learning study pointed out that, the driving question from the teacher prompts
students to think about what they already know about the topic and determine what they need to know in order to answer the question. The gap between what learners know and what they need to know drives the plan for inquiry. The teacher supports the process by explaining the goal, providing sample products, setting expectations for the learners’ roles and responsibilities, providing resources, templates, and activity structures, and modelling learning strategies. Kintsh (2009) concluded that, in project-based learning, as with other constructivist, student-centred pedagogies, instructional planning is less prescriptive, the teacher’s role is to create appropriate learning environments rather than disseminating specific facts, the role of the teacher is process facilitator rather than knowledge transmitter.

Teachers understand project-based learning in many different ways due to the differences in experience, teaching subject and other various factors. Regarding this, Ravitz and Blazevski (2010) say that “no two teachers implement project-based learning in the exact same way” (p. 178). Empirical studies that focused on teacher perceptions of project-based learning report that teachers carry positive pedagogical beliefs about project-based learning (Harrigan, 2014). Teachers perceive project-based learning as a student-oriented approach that enables self-learning (Tamim and Grant, 2013). Project-based learning requires self-regulation, allowing students some degree of voice and choice to select the topic, to find their own sources, to work autonomously on projects at their own pace, considering their interests and needs (Bas, 2011). At the same time, teachers understand their own role as facilitators or supervisors, who provide students with guidance and scaffolding in the form of
teacher-student interactions, guiding questions, peer-counselling and practice worksheets (Grant, 2002). In the very beginning teachers use planning strategies of project-based learning to plan the study, present objectives, set checkpoints and deadlines, and explain the assessment criteria for the project (Thomas and Mergendoller, 2000). Moreover, they use management and orchestration strategies of project-based learning to form groups, direct and support learners all along the project-based learning implementation process. Teachers do not use teacher-centred methods, nor do they present any material or lead activities during project-based learning. Most of the time students work independently in their own small groups. Teachers work as peers rather than classroom managers (Thomas and Mergendoller, 2000).

In sum, the review indicates that teachers generally understand it as a student-centred learning where teachers act as facilitators rather than lecturers. Moreover, it is perceived as an excellent tool to engage learners in solving real-world problems and work together in groups, sharing ideas and helping each other. Also, the teacher’s role is to assess students all along the implementation of project-based learning.

2.6 Teachers’ perceptions of learners’ role in project-based learning

Within a project-based learning environment, the student plays a more central and active role in his/her own learning. Constructivists have outlined different learners’ roles in a class based on constructivism. Some of these roles are that learners
should: actively participate in their own learning (Ormrod, 1995), accommodate and assimilate new information within their current understanding (Jordan, Carlile and Stack, 2008), begin their study with pre-conceived notions, learners need to use and test ideas, skills and information through relevant activities (Hill, 2002), construct new knowledge through exploration, manipulate and interact with learning materials to discover the new knowledge, interact, collaborate and exchange ideas when learning, derive their own goals and objectives or should negotiate them with the teacher or system (Jordan, 2008) and that students should solve authentic real-life problems when learning (Slavin, 1990).

Students involved in project-based learning engage in real world activities, meaningful problems which are interesting and important to them and are similar to what adult professionals do (Krajcik and Blumenfeld, 2006). According to Gultekin (2005), students using project-based learning become better researchers and problem solvers. The role of the student is to be an active creator rather than passive recipient of knowledge. Students in project-based learning are expected to be self-centred and take responsibility for managing their learning process. Blumenfeld (1991) found that students in project-based learning needed to “be far more responsible for guiding and controlling their own activities and focusing their work on the creation of artefacts over a long period of time” (p, 379).
2.7 Teachers’ perception on authentic classroom problem for the learners

In project-based learning, students engage in a true to life or real life situation where the purpose of the learning is clearly evident. In the best cases, the topic is of particular interest to the age of the students completing the work. Anderson (2000) states that as part of authentic experience, some projects will require students to contact outside experts in the field in order to complete specific parts of the project or answer the questions generated along the way.

Kalyoncu and Tepecik (2010) describes project-based learning as interdisciplinary, which includes the depth study of specific topics and establishes relationships between various subjects. As a result, students are not restricted by the information pertaining to different subjects. In his research, Habok (2015) states that, the planning and implementation of a project-based learning requires great attention to detail and there are numerous aspects which call for careful consideration.

Choosing a topic and a title is very important. Involving students in the decision making process is beneficial because they will feel more involved in the project. In addition, students involvement in selecting the topic, can be interdisciplinary. Increased engagement results in a greater number of shared experiences and facilitates motivation.

While project based learning has shown promise as an effective teaching methodology, simply doing projects is not enough to ensure that students are learning. Some past efforts at implementing project approaches have failed to produce learning due to a focus on activity over learning. To ensure “doing with
understanding” rather than just “doing,” (Schulze and John, 1995), the teacher must provide appropriate learning goals and structures, guidance, and coaching to ensure that learners meet the intended learning goals, develop the desired skills.

2.8 Perceived benefits for using project-based learning

2.8.1 Increased motivation

The first major benefit of using project-based learning is the increased engagement and motivation to learn (Bell, 2010). Harrigan (2014), Krajcik and Blumenfeld (2006), believe that project-based learning raises students’ engagement in various investigations where students can deal with real issues and learn experiences beyond the classroom. According to Thomas (2000), these investigations may be “design, decision-making, problem-finding, problem-solving, discovery or model-building processes” (p. 3). Hugerat (2016) investigating the effect of project-based learning on classroom learning in two Arab schools in Israel report that ninth-grade students involved in project-based learning were more satisfied with the scientific tasks and enjoyed the class more than non-project-based learning students.

Students are motivated in learning because project-based learning provides them with a hands-on approach to content (Holm, 2011). There is a slightly different perspective from Worthy (2000), who suggests that students using project-based learning are motivated and enjoyed because they have that autonomy they miss in the traditional approach. Yam and Rossini (2010) believe that teachers are the key
figures in motivating students and creating that collaborative atmosphere in the classroom. Frank, Levy, and Elata (2003) analysed semi-structured interviews of engineering students who studied in the Faculty of Mechanical Engineering at the Technion. They found that the main reason for increased motivation of students is the competition element between groups. Tamim and Grant (2013) conducted a case study exploring in-service teachers’ experiences regarding project-based learning. The purposeful sample was composed of six teachers (two males and four males) who had more than one year of project-based learning experience. Teachers were from three public schools and one private school in USA. They found that project-based learning increased students’ enjoyment and motivation to learn. Teachers reported that students became more engaged because they got the chance to show their learning and took ownership in their work. Other research studies on teachers’ perceptions also report the increase of motivation to learn by students involved in project-based learning (Huger et, 2016). On the other hand, the study of Shachar and Fisher (2004) indicated that project-based learning approach decreased the motivation of high school students. They claim that project-based learning is based on group work and therefore students had a decrease in engagement to learn, as they were not used to work in groups very often.

Thus, project-based learning is considered an effective tool to increase student engagement because project-based learning provides learners with opportunities to learn by doing. Students may go beyond the school curriculum in order to deal
with real-world problems, which also might add to their motivation. However, there is a claim that project-based learning can also decrease student engagement.

2.8.2 Skill development

Project-based learning activities help students to have a chance to develop a wide variety of skills (Bell, 2010). Nicola and Allison (2014) provide a list of skills identified in project-based learning literature. The most frequently mentioned skills are collaboration skills, communication skills, problem-solving skills and critical thinking skills (p. 14). Researchers claim that project-based learning enhances 21st century skills (Bell, 2010). Harrigan (2014) interviewed 10 female teachers regarding their experiences of integrating project-based learning and found that they all expressed that project-based learning develops 21st century skills in their students, such as critical thinking skills, teamwork and cooperation skills.

Bell (2010) in his study “Project-Based Learning for the 21st century: Skills for the future” states that skills gained through project-based learning are necessary for success in the twenty-first century. “By implementing project-based learning, we are preparing our students to meet the twenty-first century with preparedness and a repertoire of skills they can use successfully” (Bell, 2010, p. 42). Furthermore, Ravitz and Bazevski (2010) found that effective use of project-based learning by teachers who received extended professional development on project-based learning can lead to the development of 21st-century skills by students and have an enormous impact on 21st-century teaching and learning. In addition to 21st-century
skills, Larmer (2015) also report on “success skills”, such as interdisciplinary skills, soft skills, teamwork skills and time-management skills. He suggests that all these skills might be necessary for their future carriers.

Baumgartner and Zabin (2008) conducted a case study examining the effect of project-based learning on ninth grade students’ attitude towards science at a small suburban school in Honolulu, USA. They found that students who participated in project-based learning scientific investigations improved their problem-solving skills, critical thinking skills, higher-order thinking skills, and scientific thinking skills. As a group work approach, project-based learning also provides learners with opportunities to gain collaboration and communications skills (Bas, 2011 and Bell, 2010). In addition to the mentioned skills, project-based learning also develops laboratory skills, information retrieval skills, interpersonal abilities, research skills, communication skills, and time-management skills (Tamim and Grant, 2013).

Thus, literature provides many skills that are developed during project-based learning. The major ones are 21st century skills, such as creativity, critical thinking, and collaboration. In addition to 21st century skills, there are also research skills, time-management skills, and interpersonal skills. Scholars highlight that these skills might be useful for learners in their future life.
2.8.3 Improved academic achievement

Margaret Holm (2011) provides a view of research studies conducted between 2000-2011 regarding the effectiveness of project-based learning in preschool, elementary and secondary school classroom settings. All studies indicate the positive attitudes of students towards project-based learning and demonstrate the growth in academic achievement after using project-based learning. DiEnno and Hilton (2005) state that students engaged in project-based learning show significantly high knowledge results because project-based learning provided them with the opportunity to learn by doing. Moreover, Shachar and Fisher (2004) highlighting the fact that project-based learning is a group work method, found that high school students in Israel showed a significant increase in academic achievement when the project-based learning approach was used.

Bas (2011) investigated the effects of project-based learning on students’ academic achievement and attitudes towards English lesson in a high school in Nigde, Turkey and found that project-based learning significantly increased 9th-grade students’ academic gains in English and their attitude towards it. He compared students who were involved in project-based learning with non-project based learning students and found that project-based learning group performed better than students who did not use it. According to his results, project-based learning group showed better academic results because students were actively working in groups, sharing ideas and tried to understand the point of views of others. Moreover, they learned to take responsibility for their group mates.
Harrigan (2014) examined teachers’ experiences of integrating project-based learning into the classroom. The participants were experienced teachers of primary schools in a southern Florida school district, who mentioned the academic success as the main benefit of implementing project-based learning in all classes. Participants of this study reported that their students work harder and better understood the topic during project-based learning activities.

Studies demonstrate that students in project-based learning classrooms get higher scores than those in traditional classes. Project-based learning improves students’ academic achievement because of social interaction between students, as they collaborate with each other, share their best ideas and learn from their peers (Van den Bergh et al., 2006). Another reason is that students get opportunities to learn by doing and create their own knowledge.

2.8.4 Other benefits

Other merits of using project-based learning is the improved relationship between students. Project-based learning promotes support, understanding, and respect among students, creating a pleasant collaborative atmosphere in the classroom (Baumgartner and Zabin, 2008). According to Bell (2010), students working in groups also motivate and help each other because they have a common goal and in order to finish and get a successful final product, every member of the group must contribute equally. Students learn how to organise work, communicate and deal
with conflicts in groups. However, Huge rat (2016) did not find any significant
differences between project-based learning and non-project-based learning students
in terms of student-student relationships. On the other hand, many scholars agree
that project-based learning improves relationships between students and teachers
(Thomas, 2000). Another vital advantage of implementing project-based learning is
the real-world practice (Bell, 2010). “Project-based learning can make learning
relevant to the real world” (Baumgartner and Zabin, 2008, p. 2).

Thus, project-based learning provides students with a deeper understanding of the
topic, which may probably result in a higher academic performance. Several
research studies provide evidence on the positive effect of project-based learning
on the growth of academic achievement of students. Another important advantage
is the increase of engagement and motivation to learn, as it is crucial for students
to enjoy the lessons and stay highly involved in the learning process. The main
reason is that learners have opportunities to deal with real problems beyond the
classroom and that are interesting to them. As well as this, they work in groups,
which makes learning more engaging, as they can share their ideas and help each
other. In addition to this, students develop a wide diversity of skills, such as social,
academic and personal skills that will be necessary for their future lives in the
21st century. Moreover, scholars report that there are many other benefits of using
project-based learning, such as better relations between teacher and students, among
students, successful work with diverse learners and better Internet and technology
use. Bell (2010) indicates that project-based learning is a good approach for students to learn how to use the Internet and a wide variety of technologies.

2.9 Summary

This chapter provided a literature review of project-based learning. Its definition, history, teacher perceived roles, teacher perceived learner roles, teachers’ perception of authentic classroom problems for the learner as well as its benefits. The working definition for project-based learning in this study is a student-centred, teacher-facilitated approach that organise learning around projects. The chapter to follow will look at how the study will be carried out, that is the research methodology.
Chapter 3

3.0 Methodology

This chapter outlines the research design, research instruments, target group, sampling techniques, data collection procedures, data analysis techniques and ethical considerations of the study.

3.1 Research design

Constructivists view of learning informed the research design of the study. According to Cooper and Schindler (2003), a research design is a plan of investigation so conceived as to obtain answers to research questions. Leedy (1993) supported this by saying a research design is a plan for the entire research study that gives the framework of the research’s plan of action. In this study, the researcher used a case study research design to explore teachers’ perceptions of project-based learning. According to Creswell (2014), case study research design provide the opportunity to gain valuable information from participants on the phenomenon when very little is known about it. The study used a case study approach which in reality gives the researcher an opportunity to be more focused and intense with the study. According to Bell (2005) “the case study approach can be particularly appropriate for individual researchers because it provides an opportunity for one aspect of the problem to be studied in some depth….” (p9). The intent of this research was not to develop theories but to understand how teachers perceive project-based learning. An ethnography study was not appropriate for this study because it involves the observation and the meaning of behaviours,
values and language among members of a culture-sharing group (Creswell, 2007). Hence, the researcher decided to use a qualitative case study design. More so, the case study approach was used because of the researcher’s belief that the answers to the research questions could be obtained. Little is known about teacher perceptions of project-based learning in Zimbabwean context. Therefore, the researcher used case study research design to explore teacher perceptions of Zimbabwean teachers about project-based learning, their views and considerations of the benefits of using project-based learning. Moreover, this research design allows the researcher to directly contact teachers, which may provide insight into very important details that quantitative research can miss.

There are many qualitative research designs but for the purpose of this study, a case study research design has been chosen. The area of study is Bindura district in Mashonaland central. The case study was the appropriate research design to explore teachers’ perceptions of project-based learning at Nyava high school. Chiromo (2006) asserts that case studies usually relate to the present state of affairs of a particular area and involve an attempt to provide a snapshot of how things are at the specific time at which the data is collected. Much of the data of case studies come from observations, documents, and interviews. Case study research can be used to address exploratory, descriptive, and explanatory research questions (Yin, 2003).
A case study approach has been chosen for this research in order to examine the data within its real-life context. Case studies are used to collect descriptive data through the intensive examination of an event in a particular group, organisation or situation (Boodhoo and Purmessur, 2009). The study is a single case study of one school in Bindura district.

3.2 Research sampling
According to Levin (1994), a population is a collection of all elements we are studying and from which we are trying to draw conclusions. Copper and Schindler (2003) define population as the total collection of elements about which investigation is interested. The population of this study comprises of thirty teachers of Nyava high school in Bindura district. This school was selected because it provided the researcher with easy access to teachers. By the purposive sampling technique, the thirty teachers at the school were further split into a sample of five experienced teachers from the five teaching departments at the school. Purposive sampling refers to the intentional seeking or selecting of individuals or situations likely to yield a greater understanding of a phenomenon of interest (Creswell, 2003). The criterion for choosing individuals or situations is whether they are “information rich” (Patton, 1990). The five teachers were selected using the following criteria:

➢ Teachers had to be willing to participate.
Different learning areas had to be included to explore teachers’ perceptions of project-based learning from multiple perspectives of various subjects.

Teachers had to be involved in project-based learning and had experience to conduct it.

### 3.2.1 Table one

**List of participants**

<table>
<thead>
<tr>
<th>Participants</th>
<th>Department</th>
<th>Learning area</th>
<th>gender</th>
<th>Years teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>Sciences</td>
<td>Physics</td>
<td>male</td>
<td>8</td>
</tr>
<tr>
<td>Participant 2</td>
<td>Humanities</td>
<td>Geography</td>
<td>female</td>
<td>4</td>
</tr>
<tr>
<td>Participant 3</td>
<td>Languages</td>
<td>Literature in English</td>
<td>male</td>
<td>30</td>
</tr>
<tr>
<td>Participant 4</td>
<td>Practical</td>
<td>Agriculture</td>
<td>male</td>
<td>24</td>
</tr>
<tr>
<td>Participant 5</td>
<td>Commercials</td>
<td>Computer Sciences</td>
<td>female</td>
<td>6</td>
</tr>
</tbody>
</table>
3.3 Research instruments

3.3.1 Interviews

An interview is a verbal conversation between two people with the objective of collecting information for the purpose of the research propounded Gerard Keegan’s psychology site: http: Research methods and the correlation. Teacher interviews were based on a semi-structured interview protocol. The purpose of the interviews was to collect data on teachers’ perceptions of project–based learning to provide answers to the research questions that guided the study. Questions included, but were not limited to, those in the protocol. The researcher wanted to elicit perspectives and other information not anticipated in advance of the interview. The advantage of interviews is that they allow teachers to describe in detail their perceptions on their roles, learner roles as well as benefits of using project-based learning. Moreover, the interview makes it possible to have better control over the types of information received, as “the interviewer can ask specific questions to elicit this information” (Creswell, 2014, p. 240). The interview method was chosen because it allowed the teachers to express their views freely without the researcher imposing choices on them as in questionnaires and gave the researcher the chance to probe. Interviews provide researchers with rich and detailed qualitative data for understanding teachers experiences, how they describe those experiences and the meaning they make of those experiences (Rubin and Rubin, 2012).
3.4 Data collection procedures

In this study, interview was selected as the main tool for data collection. It provided the researcher with in-depth and context-rich perceptions of teachers regarding project-based learning. Semi-structured interviews were used because they provided the researcher with the opportunity to delve deeply into the topic and to ensure that the researcher covered the correct material. An interview guide was used to collect data on teachers’ perceptions of project-based learning in order to find answers to the following research questions:

- What are the teachers’ perceived roles in project-based learning?
- What are teachers’ perceived learner roles in project-based learning?
- What are the teachers’ perceptions of authentic classroom problem for the learners?
- What are teachers’ perceived benefits of using project-based learning?

During the interviews teachers were asked mainly open-ended questions so that the participants could best voice their experiences unconstrained by any perspectives of the researcher or past research findings. Open-ended questions helps participants to create many different options for responding.

The interview type was one-on-one. One-on-one interviews were convenient due to more intensive contact between the researcher and the teachers. Moreover, the teachers were free to comfortably express and share their ideas. One-on-one interviews also avoid some other teachers from domineering and masking otherwise important perceptions of reserved teachers. It also helped teachers to fully
participate as they were not afraid of airing out their views due to a conducive one-on-one environment than if it were done in groups.

An interview protocol with appropriate questions was prepared. The researcher informed the teachers that they could withdraw their participation from the study at any time without penalty. Each interview lasted approximately 30-45 minutes. Teachers were met at a time and place convenient to them. Before interviewing, all the five teachers were given a written consent form to sign. The interviews started with the researcher’s explanation of the purpose of the study, the possible benefits to them and confidentiality issues. Each teacher was interviewed once and all the conversations were audio-recorded on mobile phone with the permission of the teachers.

3.5 Data analysis
This section presents the analysis of the gathered data. The audio-taped interviews were transcribed. Then the researcher converted all audio-recordings into text data. In order to make sense of this text the researcher read through each transcript and highlighted the main ideas. The coding process was carried out in order to identify themes. The themes were framed according to the research questions of the study. Semi-structured interviews included a clear guide with interview questions, however, the order of the questions could be changed and probes could be descriptions and broad themes in the data. Lastly, research findings were compared with the literature.
3.6 Ethical considerations

Lankshear and Knobel (2004) see ethics in research as what the researcher does to ensure that the well-being and interests of teachers are catered for so that they are not harmed because of the research being conducted. Some guidelines have been suggested by Bogdan and Biklen (2003) when conducting qualitative research.

- Avoid research sites where participant may feel they are being coerced to partake the study.
- The privacy of informants must be honoured and respected.
- Make available every needed information to participants.
- Identities of participants must be fully protected unless otherwise agreed upon.
- Participants must be treated with respect and their cooperation must be sought.
- Terms of the agreement should be clear and must be abided by the researcher when requesting for permission to do the research.
- Be truthful when writing and reporting the findings.

To conduct a research whose findings would be valid and trustworthy, teachers were given all the assurance concerning the protection of their privacy, identities and were given the opportunity to agree on whether to participate in the study or not. Their names and the name of their departments were removed from the interview notes. All documents with teachers’ personal information, such as
informed consent forms, audio recordings and transcriptions, were kept in confidence and a computer with a password. Only the researcher had access to the collected information. After the data analysis was finished, all the original information was deleted.

To avoid making teachers uncomfortable, at the beginning of the interviews, the researcher told them that they could choose not to answer any questions which made them feel uncomfortable. In addition, teachers could possibly fear that if their identities are revealed they could face problems at school. In order to minimize this risk, the researcher met the teachers at a time and place convenient for them. To prevent all possible risks teachers were introduced to the written consent form that included information about anonymity and confidentiality.

3.7 Summary

This chapter presented detailed information on the methodology for the research. It included the research design, population of the study, sample and sampling procedures, research instrument, data collection procedures and data analysis procedure. A case study research design was selected in order to deeply explore teacher perceptions of project-based learning with regards to teacher perceived roles, teacher perceived learner roles, teacher perceived benefits as well as teacher perceptions on authentic classroom problems for the learners. A case of teachers at Nyava high school was chosen because it provided the researcher with easy access to participants. Criterion sampling was used to choose five teachers from the five teaching departments of the school, who were “information rich”. Semi-
structured interviews were selected as the main tool for data collection. All conversations were audio-taped and transferred into the researcher’s laptop. The data was transcribed and then coded into broad themes, which were later analysed and compared with the literature. Lastly, ethical issues were discussed. The next chapter will be analysing and discussing the data obtained from the interviews.
Chapter 4

4.0 Introduction

The purpose of the study was to explore Nyava high school teachers’ perceptions of project-based learning. In this chapter, the researcher analysed and discussed the results obtained from the teacher interviews in line with research questions that guided the study. It compares the results of the study to those reported in the literature review. In particular, the study sought answers to the following sub-questions.

1. What are teachers’ perceived roles in project-based learning?
2. What are teachers’ perceived learner roles in project-based learning?
3. What are teachers’ perceptions of authentic classroom problems for the learners?
4. What are teachers’ perceived benefits of using project-based learning?

4.1 Teachers’ definition of project-based learning

The teachers defined project-based learning approach in different ways. Their definitions generally focused on creating a product within a specified time period. It was noted, that they also considered the process important for creating a product. Moreover, they indicated that project-based learning involves a lot of group work. Physics teacher defined project-based learning as:

an approach which results in a product and for which the process is important and, during the process, the teacher has a guidance role.
Agriculture teacher explained:

A project-based learning approach means making the learning process real by using projects.

Learning by doing was emphasized more in some definitions. The teachers’ responses included statements concerning, for example, students learning on their own, doing research and applying what they had learnt.

Geography teacher claimed:

Project-based learning means that the student conducts research, investigates, makes observations, and receives information from primary sources by directly reaching the source of information.

Teachers emphasized student roles in their project-based learning definitions and mentioned that the student has an active role during the process.

The computer science teacher explained:

Project-based learning is about making students more active and efficient by building instructional activities based on a project. The teacher is a guide while the student is doing a project.

The teachers’ definitions are in consistent with that of Thomas (2000) who states that project-based learning is a model that organises learning around projects. It can be different tasks with questions and problems that involve students in problem solving and investigative activities.
4.2 Teachers’ perceptions of project-based learning

Teachers’ responses to the research question “How do you perceive project-based learning?” were analyzed and then categorized into the following:

- Self-learning;
- Increased engagement;
- Conceptual understanding.

These three themes are explored in the subsequent sections.

4.2.1 Self-learning

When asked “How do you perceive project-based learning? The Computer Science, the Physics, and the Literature in English teachers pointed out that during project-based learning students are afforded the opportunity to learn by doing.

The researcher: How do you perceive project-based learning?

The Computer Science teacher said: The way I understand it, you give a project, but you do not want to teach students, they learn by themselves, they get the idea and they learn something.

Similarly the Literature in English teacher also believed that project-based learning is just about directing students:

You just direct them and students learn on their own.

This is similar to the views of the Computer Science teacher who believed that sometimes students do not need him during project-based learning.
In contrast, the Geography teacher responded that project-based learning is more about teaching students. He responded:

*In my opinion project-based learning is a great way to teach students by giving interesting projects.*

In this case, it is worth mentioning that teachers may have different background and experience; therefore some teachers can give more space and freedom than others. The Geography teacher also highlighted the fact that project-based learning is more about self-learning and teachers should just support the learners:

*It is convenient for me just to show the right direction and help them to do the work by themselves.*

Overall, all teachers agreed that project-based learning is a strategy that involves students in doing the work by themselves, and providing more space and freedom for self-learning. These results are consistent with the findings of Hugerat (2006) who states that “learning by doing” and “child-centred learning” are the core values of project-based learning (p. 393). Moreover, the teachers claimed that project-based learning provides learners with opportunities to do the work by themselves, which helps them get involved in their own learning. Scholars also emphasise the importance of hands-on approach to content (Holm, 2011) and learning by doing in project-based learning, which results in a deeper learning and understanding (Bas, 2011; Thomas, 2000).
4.2.2 Increased engagement

Teachers claimed that project-based learning is about learning one topic and it is based on students' interests. This suggests that it is very important to involve students in the process of learning. One of the teachers explained:

They can learn interesting things. Project-based learning will be useful in order to get their attention, to raise their interests in the particular subject, and they will be doing it willingly (Literature in English teacher).

Literature in English teacher highlighted the fact that project-based learning could be a great tool to raise students’ interests in a particular subject, which is very important today and could also be helpful to raise their academic achievement. The last point is that there will not be any need to push them, because “they will be doing it willingly”.

Teachers of Physics, Agriculture and Computer Science had the same point of view regarding student engagement and involvement. The Physics teacher explained: If you give a project, pupils by doing the work themselves ... get involved in the process.

Meanwhile, the Computer Science teacher stated:

I see how students get interested, and I think this is the best strategy to make students do something.

According to the Computer Science teacher, project-based learning could be a good motivation to do something, because they get interested in it.
When asked how they perceive project-based learning, all the five teachers reported that projects should be engaging for students and take into consideration their areas of interests. Regarding this issue Krajcik and Blumenfeld (2006) stated that project-based learning became a great tool to engage learners, who were often bored on lessons. Teachers reported that they gave interesting projects to their students to raise their motivation. This is similar to Yam and Rossini’s (2010) beliefs about teachers being the key figures in motivating students and creating a pleasant collaborative atmosphere in the classroom. On the other hand, it is worth mentioning that Shachar and Fisher (2004) demonstrated that project-based learning approach decreased the motivation of high school students because it was based on team work.

In sum, all teachers emphasised the importance of students being interested in their own learning. Moreover, they agreed that if students get interested in doing projects they will be highly involved in the process of learning. This suggests that highly engaged and involved students may even understand the topic more deeply and achieve higher academic performance.

4.2.3 Deeper understanding of subject matter

This section provides information on how teachers perceived project-based learning in terms of subject understanding.

Researcher: How do you perceive project-based learning?

The Physics teacher: I think students develop their skills during project-based learning and get the opportunity to understand difficult Physics topics.
This means that project-based learning is perceived as a great teaching strategy that is useful in explaining various topics that are difficult to understand.

Similarly, the Agriculture teacher described:

*Project-based learning is a good method for teaching student. Because when you teach only the theory, it is not enough for them to get a deep understanding on the topic, but if you give a project, pupils by doing the work themselves will better understand it.*

This demonstrates that project-based learning provides students with the opportunities to practice the theoretical knowledge that they get during lessons and fully understand. The literature supports this understanding of project-based learning, confirming that project-based learning provides learners with opportunities to more deeply investigate the topic they are interested in (Bell, 2010; Holm, 2011).

It is very interesting to consider the Literature in English teacher’s opinion:

*Some students fail exams and in order to get good marks they can take project-based learning and prove to the teacher that they are the right students to get excellent marks.*

This quote might indicate that in project-based learning, students have the opportunity to show what they understood about the topic in a slightly different way.
Based on the teachers’ responses, the most crucial difference is that some subject teachers admitted that project-based learning is useful in helping students better understand difficult topics, practice theories and concepts that they learnt during lessons, giving them motivation to study by themselves. However, others believed that project-based learning is mainly for weak students, giving them a chance to achieve higher marks by conducting projects.

Thus, teachers perceived project-based learning as a strategy to help students get involved and motivated to study subjects but in a different manner. Moreover, according to the teachers’ responses, project-based learning appears to be focused on self-learning, providing students with more freedom and space, which makes them more responsible for the work they are doing. More so, the most important point about project-based learning is that it helps students to understand particular topics deeper.

4.3 Perceived teacher roles

As teachers described how they perceive their roles when using the project-based learning approach. Scaffolding, managing team work, and collaboration were the perceived teacher roles in project-based learning.

4.3.1 Scaffolding

Teachers in this study perceived their roles as that of facilitators, monitors and guides. These roles are portrayed in the project-based learning literature as essentials where teachers support learners in building subject matter as well as in
acquiring management and inquiry skills (Kintsch, 2009). It is along these lines that the teachers explained how they go about supporting their students in moving forward with their projects. They scaffold the learning process through clarifying goals and expectations, facilitating, and providing guidance.

4.3.1.1 Clarifying goals and expectations

Teachers emphasised on clarifying the goals and expectations of the tasks before the implementation of the project-based learning as one of their roles.

Researcher: What do you perceive to be your role in project-based learning?

Agriculture teacher explained: Well I do have to give very strict guidelines like a rubric, and give them a model of what I want.

4.3.1.2 Facilitating

Another important component of project-based learning is the facilitation of knowledge construction. The computer science teacher explained:

As a teacher, I will be just walking around, kind of guiding them... I don’t ever want to just give them the answer; I want to lead them to the answer. And often there are times that I don’t know the answer too.

So, teachers aimed at having their students construct their knowledge and improve their thinking and inquiry skills. They facilitated this process by supporting students and steering them in the right direction. According to Barrows, the role of the teacher in a project-based learning classroom is not to convey knowledge to the students but rather to facilitate their learning experience. The students are
supposed to understand and determine what is it they need to learn and how to do this on their own with only guidance from the teacher (Barrows and Tamblyn, 1980).

4.3.1.3 Providing guidance

Other than clarifying the goals and expectations and facilitation, in some instances, teachers provided guidance to help the student work through the project. When asked what their roles in project-based learning are, the Computer science and the Physics teachers explained by examples.

Computer science teacher: I might do some type of web quest or something based on the project that we’re working on or the skill. . . . Or they might have a sheet that they can use as a guide to help them guide their research.

The Physics teacher: I try to make the introduction or the background. I just try to introduce them to it and then provide them with different places to go to do their own research.

Hence, teachers made an effort to provide the students with resources that guided them as they developed their subject matter. Stone (1998) described scaffolding as a “continuing cycle of communicational tension and resolution” (p. 354). In describing how they guided their students, the teachers reflected this cycle and revealed a good understanding of the scaffolding process that is needed in project-based learning in specific and in constructivist student-centred learning environments in general (Grant, 2002).
4.3.2 Managing team work

Besides being attentive to scaffolding and guiding the students as they pursue the development of their projects, teachers also gave great importance to team building and group dynamics. Teachers perceived making team work a successful and productive endeavour. Their role here is to set the rules for conflict resolution and to ensure effective participation of all the members in the team.

The Physics teacher claimed:

*I say to them when it comes down to something you can’t agree on, we would use the majority rule deal, . . . in that process they kind of learn as they go and we try not to intervene more than we have to.*

Literature in English teacher explained:

*I will sit with them and we will work out whatever is going on, but I don’t allow them to just leave the group because I don’t feel that is good for anyone. I think they need to work through their problems and I view this class as a community.*

Therefore, not only did teachers invested their effort in the knowledge building process but also, they spent time cultivating skills that helped their students become successful. The way the teachers went about their assessment reflected their views on how project-based learning allowed for nurturing and assessing many more skills. They targeted skills that went beyond the acquisition of knowledge and empowered the students to succeed in authentic environments. In this respect, these teachers allowed their students to experience success and to learn from their mistakes (Wolk, 1994).
4.3.3 Collaborating with other teachers

Teachers in this research study perceived collaboration with other teachers as one of their roles in Project-based learning.

The computer science teacher explained:

We want to do something where the learners are taking things from different subjects... really try to pull it throughout the whole curriculum. I would recommend collaborating with another teacher if you want to start to do a project-based learning... it shouldn’t be all one sided because other people bring such good ideas to the table.

This is in line with the Geography teacher who claimed:

It’s very easy to work as a team... you have a math teacher, a science teacher, and a language teacher and we’re provided with teaming time.

Thus, collaborating with other teachers enhance the planning of the projects and the integration of several subject matters, and it facilitates the whole task of project-based learning.

4.4 Teacher perceived learner roles

This section provides information on how teachers perceived learner roles to be in a project-based learning.

Researcher: What are your perceived learner roles in project-based learning?

The Geography teacher explained: I think the role of learners is to ask questions, build knowledge, and determine a real-world solution to the question presented. Learners must collaborate expanding their active
listening skills and requiring them to engage in intelligent focused communication, therefore allowing them to think rationally on how to solve problems.

Teachers claimed that in a project-based learning, learners participate actively in the discussion, contribute actively to the discussion. They make notes and write down matters that are relevant for them. Learners also summarise the outcome of every step. Physics teacher who said:

Students actively participate in the work with their creative thinking ideas as well as they gather information to the problem in their individual self study time. Furthermore, learners must learn the theory so they gather information in order to enable them to apply it actively.

The Computer science teacher described the learner roles by saying:

Instead of giving them a very rigid plan, I give them structure but I feel like they have a lot more liberty to find a way that they learn best in this atmosphere... I feel like as far as in Computer science especially that I kind of give them information but then they take it to the next level so I will give them an introduction and they have to do research on their own and share back with the class what they learnt.

Through project-based learning, facilitated by a teacher, Learners are seen as being collaboratively responsible for their learning. They play a more central and active role in their own learning. This is in consistent with Jordan (2008) who describes the learners’ roles as to interact, collaborate, exchange ideas when learning, derive
their own goals and objectives, negotiate them with the teacher or system and solve authentic real-life problems when learning.

4.5 Teachers’ perceived benefits of using project-based learning

This theme provides information on teacher perceived benefits of project-based learning. It consists of the following two subsections:

- Teachers’ benefits when using project-based learning;
- Learners’ benefits when using project-based learning.

4.5.1 Teachers’ benefits when using project-based learning

The identified benefits indicated in this study are:

4.5.1.1 Improved discipline

Teachers reply that project-based learning is beneficial for them in terms of creating a pleasant atmosphere in the class and keeping discipline. For example, regarding this the Literature in English teacher explained:

It is students' task to do everything. In this case, it would be easier for the teacher to control them.

This suggests that while the most part of the work is done by students, therefore, it is easier for the teacher to organize students and keep discipline.

The Physics teacher said:

During project-based learning students do not interrupt each other and it is easier for me to organize students for group work.
In this case, we can see that the teacher indicated the use of project-based learning in maintaining discipline in class and to manage his students to work in groups.

The Geography teacher believed that project-based learning helps to better know and learn about every student, 

*when doing project-based learning, there are a lot of opportunities for you to get to know the students. It gets easier for you to find common points between you and your students. You can easily control and motivate your students.*

The response also shows that the Geography teacher motivates his students,facilitates their learning and is able to organize them through getting to know them and finding common points.

Based on the teachers’ responses, it is worthwhile to mention that project-based learning is helpful to create that pleasant collaborative atmosphere in the classroom in order to keep discipline and encourage students to take ownership of their own learning. The results are consistent with the findings of Hugerat (2016), who found that project-based learning students are more actively engaged and involved in their own learning which helped teachers perceive the overall atmosphere in the classroom as less tense and less difficult.
4.5.1.2 Improved teacher-student relations

One of the most important benefits of using project-based learning for teachers might be the creation of good relationships with students. It might be vital due to the fact that the deeper the relations they have with their students and the more profoundly they know them, the more open students may be with them, and as a result, teachers might probably be more able to help them with their problems. According to the responses, all teachers in diverse ways indicated that project-based learning provides them with the opportunity to establish very good relationships with their students, which possibly leads to a more pleasant and collaborative atmosphere in the classroom. In this regard, Van den Bergh et al. (2006) states: “There is an occasion for both parties – students and instructors – to cooperate more closely: they come to know each other better and become more personally and informally involved” (p. 354). This in turn may encourage students to delve more profoundly into their project work and foster an atmosphere of collegiality and inquiry which supports the teaching and learning process.

For example, the Literature in English teacher regarding the relationships with students claimed:

> You get closer to your students, create warm relationships with them and there is more trust between you and them. And when you give any tasks they do it with pleasure!” It is crucial to trust and have a trust with your students, as they will probably be more open and honest with the teacher.
Based on the response, we can suggest that students do the given tasks with more pleasure, which makes it easy to work with them. In the same way, Kubiatko and Vaculová (2011) claim that project-based learning “promotes mutual respect, support, and understanding, making an impact on student-student and student-instructor relationships” (p. 68). This probably indicates that teachers have a great chance not only to help their students in implementing project-based learning but also to get to know them better, learn their weak sides and even help them solve various problems in other areas of their lives.

The Physics teacher added more light on the issue of relationships, saying:

*Relationships with students get better because you start to work with every student individually.*

This suggests that teachers may have better relationships with their students when they focus on an individual approach. When a teacher works with the whole class, it is much more difficult to negotiate with every student and help them with their questions and problems. Moreover, the Computer Science teacher also positively responded: *I can really feel that we got closer to students, we learnt many new things about them.*

Thus all teachers agreed that project-based learning helps them create good relationships with their students, learn a lot about them and help them with their questions and problems.
4.5.2 Learners’ benefits when using project-based learning

The previous section presented benefits of using project-based learning for teachers and this section deals with benefits for students. Based on the teachers’ responses the most important benefits of using project-based learning for students are as follows:

- Acquisition of skills,
- Provides authentic real-world challenges, and
- Improved working relationships among students.

4.5.2.1 Skill improvement

Most teachers believed that project-based learning helps students to master or develop certain skills. For example,

The researcher: What are the benefits of project-based learning to your learners?

Geography teacher claimed: Students develop their 21st-century skills, such as communication, creativity, and critical thinking skills. They work in groups and have the opportunity to help each other because stronger students help weaker classmates to understand particular topics.

She claimed that students working in groups could probably develop their communication skills, especially when they help each other. This suggests that while stronger students help the weaker ones they could also improve their mentoring skills. When students work in groups they may have different ideas and thoughts on particular topics. As a result, it could improve their creativity and
critical thinking skills, as they will be free to discuss any upcoming ideas on the topic.

In the same way, the Literature in English teacher responded:

*In this case, students will think not in the way you teach them, but they will think out of the box, they can have many great ideas.*

This suggests that students do not have to learn only what a teacher teaches; they have more space and freedom to be creative. Regarding skill improvement, the Physics teacher responded:

*In my opinion, the most important benefit for students is that they can develop their hidden skills. They also improve different skills, such as presentation and collaboration skills.*

Mentioning that he highlighted the fact that the skills are hidden, which probably indicates that they may not develop these skills unless they engage in project-based learning. Moreover, the Physics teacher mentioned presentation skills, which are improved when students present their project work. Similarly, Harrigan (2014) found that project-based learning also prepares students for future job markets. Moreover, Bell (2010) emphasises the importance of project-based learning in developing necessary skills in students and preparing them for success in the 21st century.

As can be seen from the responses, teachers believed that project-based learning helps students improve in several skill areas, become more creative and provides them with the opportunity to have new ideas and share them with each other.
4.5.2.2 Provides authentic real-world challenges

Another most important benefit of using project-based learning for students is hands on experience, as project-based learning provides them with the opportunity to go to the field and do the practical part of the project work. It is especially widespread in science subjects, such as Biology, Physics and Chemistry. Regarding the practice the Physics teacher explained:

*In theory, it is not interesting for them, but when they do it by their hands it becomes more useful and engaging for them.* Moreover, he added: *when you teach only the theory, it is not enough for them to get the full information on the topic, but if you give a project, pupils by doing the work themselves will better understand it and get involved in the process.*

This is consistent with the findings of Baumgartner and Zabin (2008), who claimed that practicing increases student engagement and improves their ability to do science.

Based on his answer, it can be suggested that practice during project-based learning engages and involves students in their own learning, as well as helps them to understand the subject in greater depth. Similarly, regarding this issue, Kubiatko and Vaculová (2011) claimed that the first step to successfully integrate project-based learning into the classroom is *practice-based nature of knowledge and learning*. This suggests that practice plays a huge role in the project-based learning. This is reflected in the response of another teacher:

*I think that project-based learning can be used not only in subjects, it can be some type of social area for interesting things you want to know, like*
surveys, public opinion. Project-based learning can help us to think how we can make this world better (Literature in English teacher).

According to him, students are not bounded merely by defined subjects, but they can observe anything they want, any area that might be of interest to them. It can be surveys, public opinions, and other real-world problems. Moreover, the Literature in English teacher added that project-based learning could even be used to make this world better by solving real existing problems.

Concerning the real-world practice the Computer Science teacher responded:

*solving real problems, makes them feel serious and confident.*

Students trying to deal with real existing issues will possibly be very serious about them and understand all upcoming consequences of their activities. As a result, it might raise the level of responsibility for their project work.

In sum, it was described by teachers that students are more engaged and involved in the learning process when they have enough real-world practice. Moreover, real-world issues are more interesting to students, as they may feel that they can be helpful in solving meaningful and existing problems, therefore take responsibility for their work.

4.5.2.3 Improved working relationship among students

Project-based learning provides teachers with opportunities to know and have a good relationship with their students, which might be helpful to teachers in managing, organizing and guiding the class. Another benefit to mention is that
project-based learning also helps students be friendlier with each other and support their peers within each group. As project-based learning is a group work approach, students have a common task to finish and this possibly suggests that students within every group will try to equally contribute to the project and help their group mates when necessary. The Computer Science teacher explained on this issue:

*working as a group they share ideas, listen to partners, trying to understand them, find the common points.*

Based on her statement, students in groups support group mates, listen to them and try to find common points. This suggests that by helping and sharing, students may have better relationships with each other.

The Agriculture teacher mentioned that students working in groups support each other and explain difficult topics to those who do not understand sometimes even better than the teacher. As a result, this indicates that as students help each other, they may create have good relations with their peers.

The Physics teacher regarding this issue claimed:

*It is really useful for me because strong students help weak ones... Moreover, they have a better relationship with their friends during project-based learning.*

As in all responses, the Physics teacher believed that project-based learning provides students with the opportunity to work in groups and support each other. Project-based learning creates that positive and pleasant collaborative environment for learning which helps students to work more effectively and help each other
grow within their groups. This is consistent with the findings of Van den Bergh et al. (2006), who highlights that one of the most important benefits of project-based learning is that students learn how to deal with conflicts between group members within each group (p. 353).

To sum up, there are many benefits to students from using project-based learning and the most important ones are as follows: the improvement in certain skills, opportunity to deal with real practical work and good relationship with peers. However, there are also some extra advantages of using project-based learning for students. For example, the Literature in English teacher said: Shy students can show their abilities. This could suggest that project-based learning welcomes diversity and helps various students express themselves in a different manner. As well as this, he mentioned parental satisfaction:

> Of course it is also very useful when you show to their parents what they have done, they would get really satisfied.

It is very important that parents see the success of their children and get satisfied. One of the most crucial benefits to students might be the use of the gained skills and abilities at university. Regarding this, the Computer Science teacher explained: I think when they go for university it will be easier for them to make different projects because they have learned all the necessary strategies.
4.6 Summary

In this chapter, the findings of the research study from the five interviewed teachers were discussed and analysed. The next chapter will include a summary of findings, conclusions drawn from the analysis and finally the recommendations.
Chapter 5

5.0 Summary and Recommendations

The research sought to explore Nyava high school teachers’ perceptions of project-based learning. The previous chapter analysed and discussed the data obtained from the research. This chapter focuses on the summary, conclusions and recommendations of the study.

5.1 The summary of the study

The findings of this study suggest that there are wide-ranging perceptions of project-based learning, however, some of them were identified as common by being frequently mentioned in teachers’ responses. Teachers perceived project-based learning in three major aspects. The first one is self-learning, which means that project-based learning is a more student-centred approach than a teacher-oriented method. Findings also suggest that teachers are only facilitators who direct students. At the same time, learners are left with much freedom and autonomy to go beyond the school curriculum and create their own knowledge.

The second aspect is increased engagement, which means that project-based learning raises students’ interest in learning because during project-based learning students are provided with opportunities to deeply investigate topics that are meaningful and interesting to them.

Lastly, teachers perceive project-based learning as leading to improved conceptual understanding of the subject. In this regard, project-based learning provides
students with opportunities of collaboration, practicing theoretical knowledge and engaging in real existing problems, which contribute to their better understanding of the subject content.

As regards teacher roles, the data suggest that teachers mostly perceive their roles to be that of:

- **Scaffolding**: clarifying goals and expectations as well as providing guidance.
- **Managing team work**: making team work a successful and productive endeavour by setting rules for conflict resolution and to ensure effective participation of all members in the team.
- **Collaborating and integrating**: with other teachers enhancing the planning of the projects and integration of several subject matters.

Thus, the teacher plays the role of facilitation, guide, co-learner, and co-worker manager who creates the learning environment for the learners.

The findings suggest that, in project-based learning the learner plays a more central and active role in his/her own learning. Teachers perceived the role of learners as that of, actively participating in their learning, accommodating and assimilating new information within their current understanding, constructing new knowledge, interacting, collaborating and exchanging ideas when learning, driving their own goals and solving authentic real-life problems when learning. Thus the role of students is to be an active learner and meaning maker.
The first identified benefits are facilitation of learning, improved relationship between teacher and students, and better relations among students within the groups. These three benefits are interconnected, as they all have a positive impact on the general atmosphere of the classroom. The data suggests that project-based learning creates a pleasant and collaborative environment in the classroom because it is based on the group work approach, which contributes to the improvement of students’ relationships within groups. Moreover, it makes it possible for teachers to easily guide the whole class and have close contact with every group. Teachers also could use an individual approach, working with every student face-to-face, especially with those who need help the most. The findings indicate that working on a one-on-one basis helps teachers to get to know and learn a lot about their students, that is, their weaknesses, strengths, needs and problems. Therefore project-based learning could be a great tool of helping students not only in school, but to know and support them even outside the school environment.

The findings show that project-based learning is not just another teaching technique but it is more of an educational transition from school to the real-world, which makes students’ school life more meaningful and engaging. It does not give ready answers but motivates learners to search and find their own answers to the questions through tackling real and existing problems. Moreover, during project-based learning students go beyond the curriculum and may create their own knowledge.
Thus, project-based learning is perceived as an effective tool of increasing student engagement in learning and fostering great conceptual and relational understanding of the subject. Teachers believe that project-based learning is focused on learners, provides them with opportunities to go beyond the school curriculum and create their own knowledge. Moreover, teachers claim that project-based learning improves students’ practice by involving them in real meaningful activities and connecting them to the real world.

5.2 Recommendations for classroom practice

Considering the benefits of interdisciplinary knowledge and skills mentioned in the literature, the school administration of Nyava high school should encourage convening of interdepartmental meetings so that different teachers share ideas and experiences on project-based learning implementation in their subject areas. As a result, teachers may improve their interdisciplinary knowledge and help students deal with problems that require them to conduct project-based learning from the perspective of multiple subjects.

Teachers in this study were concerned about the lack of necessary materials and resources for project-based learning implementation. The school administration should strive to provide the necessary resources and materials timeously. Solving this problem could probably contribute to a better implementation of project-based learning in the future, as students would have opportunities to conduct project-based learning in any subject area in which they are interested.
It was found that teachers lack knowledge and experience in various areas of project-based learning implementation, such as scaffolding, organising group work, and dealing with real-world activities. Regarding this, the heads of Schools in Bindura district could think about conducting project-based learning courses and training for teachers.

Considering all the benefits and the influence of project-based learning on students, policymakers could think of incorporating project-based learning into every subject as a mandatory part of the final grade in Zimbabwean schools. One part of the lesson could remain theoretical in a teacher-centred manner; however, the second part could be more practical in a student-centred style. As a result, this could help teachers and students shift from the teacher-oriented approach to student-centred learning more gradually. Students could choose topics within the curriculum and after an in-depth investigation, present back the findings to the class, as all presenting groups would have different topics, many aspects of the subject matter could be covered in detail and in a short space of time. This could also be beneficial to teachers, as they will not have to explain all topics by themselves rather they would facilitate the learning instead.

Furthermore, project-based learning being implemented as a mandatory part of the subject would probably require teachers and students to spend less of their own time after lessons, as it would be partially done during the lesson.

These are only possible suggestions for school administrators and policymakers in education. The results of this study are not intended to be generalised. This
probably indicates a need for further research on project-based learning in order to fully understand all peculiarities of this approach in the context of secondary education.

5.3 Recommendations for further research

One of the limitations is the small sample of five teachers who teach Physics, Geography, Literature in English, Agriculture and Computer Science. It can be recommended for further studies on project-based learning to include more teachers from many other subject areas to see how it works in other learning areas. Furthermore, there is a need to also explore Nyava high school students’ perceptions of project-based learning. Only after taking into account both teachers’ and students’ perceptions, would researchers be in a position to have a full picture of how project-based learning is implemented. The researcher suggests further research on students’ perceptions on their teachers’ roles in project-based learning, thus a more complex evaluation of project-based learning would provide a comprehensive view from teachers’ and students’ perspectives. Future research studies could be conducted in many other Bindura district schools to see how teachers perceive project-based learning in other contexts.

Lastly, the study was based on a qualitative case study research design, which cannot generalise results to the population. There is also a need to conduct a quantitative research to gather numerical data and measure the relation of variables on each other and on academic achievement. This could provide researchers with opportunities to compare project-based learning and non-project-based learning groups to see the effect of project-based learning on academic achievement.
REFERENCES


Hello! Thank you for consenting to participate in this study on teachers’ perceptions of project-based learning. Once again, let me go over the purpose of the study. The purpose is to get a deep understanding of how teachers perceive project-based learning. Our interview will consist of a series of probing questions that will help me collect the data that I need for the study. I will also be taping our interview for the purpose of accuracy of the data, and I will be taking some notes. Do you have any questions for me before we start the interview? (Give teacher clarifications as needed). Great! Let’s start then. First I will collect some demographic variables to help me describe the sample in the study.

<table>
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<th>School department</th>
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<td>Gender</td>
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<tr>
<td>Number of years you have been teaching</td>
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How do teachers define Project-based learning?

- What does project-based learning mean to you?
- How do you perceive project-based learning?
- Where do you get the appropriate knowledge on project-based learning?
- Can you give me an example of a project-based learning activity that you have implemented?

What do you perceive the role of the teacher to be in a project-based learning activity?

- How do you present the project-based learning activity and how do you go through the processes with your students?

What do you perceive the role of the learners to be project-based learning?

- How do your students go about implementing the project-based learning activity?

When you plan a project-based learning activity, what are the components that you include in your plan?

- When do you chose to implement a project-based learning activity?
- What triggers your decision to give a project-based learning to your learners?
➢ Are there certain skills you target, can you give examples?

➢ How do you describe a successful project-based learning activity?

❖ What are the benefits of using project-based learning

➢ Could you tell me the most important benefits for learners?

➢ What are the benefits of using project-based learning to the teacher?

➢ What are the difficulties in using project-based learning?

Thank you
### Table one

**List of participants**

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