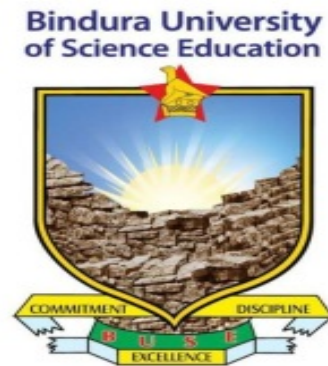**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

FACULTY OF SCIENCE EDUCATION

**BACHELOR OF SCIENCE EDUCATION HONOURS
DEGREE IN MATHEMATICS**

AN INVESTIGATION ON THE TEACHERS' PERCEPTIONS ON THE IMPLEMENTATION

OF THE COMPETENCE BASED CURRICULUM TO THE TEACHING AND LEARNING

OF MATHEMATICS AT ORDINARY LEVEL IN MARONDERA DISTRICT

BY

NDANETA CONSTANCE TRACY

REG NO. B224830B

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS

OF THE BACHELOR OF SCIENCE HONORS DEGREE IN MATHEMATICS EDUCATION

JUNE 2024

RELEASE FORM

TITLE OF DISSERTATION: An investigation on the teachers' perceptions on the implementation of the competence-based curriculum to the teaching and learning of Mathematics at ordinary level in Marondera district.

1. **To be completed by the student**

   I certify that this dissertation is in conformity with the preparation guidelines as presented in the Faculty Guide and Instructions for Typing dissertations.

   23/05/24

   (Signature of student)   (Date)

2. **To be completed by the supervisor**

   This dissertation is suitable for submission to the Faculty. This dissertation should be checked for conformity with Faculty guidelines.

   Dr. L.H.N Mutambara   (pp)   30/06/24

   (Signature of Supervisor)   (Date)

3. **To be completed by the chairperson of the department**

   I certify to the best of my knowledge that the required procedures have been followed and the preparation criteria have been met for this dissertation

   Name(Chairperson): Dr. Z. Ndemo

   pp   10/10/24

   (Signature of the chairman)   (Date)

APPROVAL FORM

Name of the student: NDANETA CONSTANCE TRACY

Registration Number: B224830B

Dissertation Title: An investigation on the teachers' perceptions on the implementation of the competence-based curriculum to the teaching and learning of Mathematics at ordinary level in Marondera district.

Degree Title: Bachelor of Science Education Honors Degree in Mathematics.

Year of completion: 2024

Permission is hereby granted to Bindura University of Science Education to single copies of this dissertation and to lend and sell such copies for private, scholarly scientific purposes only. The author reserves the rights and neither the dissertation nor extensive extracts from it be granted or otherwise be replicated without the author's consent.

Signed   Date 23/05/24

Permanent Address: IGAVA SECONDARY SCHOOL

P.O BOX 833

MARONDERA

AKNOWLEDGEMENTS

ABSTRACT

The purpose of this study was to gather teachers' perceptions on the implementation of Competence-Based Curriculum in the teaching and learning of Mathematics at the Ordinary Level in Marondera District, Mashonaland East, with Igava and Mushangwe Secondary Schools as case studies. This study was led by four key objectives, which included: to understand teachers' perceptions of the competence-based curriculum and how it differs from previous curricula, to identify the challenges and barriers that teachers face in implementing the competence-based curriculum, especially when teaching mathematics, to investigate the factors that influence teachers' attitudes and readiness to adopt the new curriculum, and finally to evaluate the impact of the competence-based curriculum on student learning outcomes, particularly. The study adopted qualitative research methodology drawing largely from case study design. The target population included 15 Mathematics teachers who were teaching Ordinary Level classes at both schools, in Marondera District, Mashonaland East Province. A sample of about 11 Mathematics teachers, and 1 Head of Science Department was purposively drawn in order to elicit information for this study. Data were collected through in-depth interviews and questionnaires. The resultant information was analyzed by both qualitative and quantitative approaches. The study revealed that most Mathematics teachers lacked knowledge of the requirements of Competence-Based Curriculum in the teaching and learning of Mathematics at Ordinary Level. The respondents indicated that lack of this know-how affected the effective implementation of CBC. The study also found that most teachers continue to use traditional teaching and assessment methods and rarely employ Competence-Based teaching methodologies. It was also revealed that there is a requirement for teacher training and/or staff development in the implementation of competency-based curriculum.

DEDICATION

This work is dedicated to my one and only daughter , Candy Manasseh Ndaneta , for the hard

times she went through during the trying times of the course and studies. To my little sisters,

Tendai and Talent Ndaneta , my mom and dad , you are the reason why I keep moving even when

the road gets tough.

ABREVIATIONS/ACCRONYMS

STEM-   Science, Technology, Engineering and Mathematics

CBAM-   Concerns Based Adoption Method

HBSCED-   Honours Bachelors Science Education Degree

Table of Contents

CHAPTER 4: DATA PRESENTATION AND ANALYSIS

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

LIST OF TABLES

.

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER 1

THE PROBLEM

1.0 Introduction

Competency-based curriculum (CBC) has been introduced in the education system as a way to

address some of the challenges that have been faced in the past, such as poor academic achievement, lack of alignment between theory and practice, and low levels of critical thinking and problem solving. The CBC aims to address these challenges by shifting the focus from knowledge transmission to the development of specific competencies that are needed for success in the 21st century. It is hoped that the CBC will improve the quality of education in Zimbabwe and prepare students for the demands of the modern world. This research is mainly aimed to look over on the teacher's perceptions on the implementation of competence based curriculum in Zimbabwe particularly in Marondera district. In this chapter, the researcher shall look at background of the study, research objectives, research questions, significance of the study, limitations of the study, delimitations of the study as well as definition of key terms.

1.1 Background of the study

Globally, there has been a move towards "competency-based education," which is an approach that focuses on the learner's ability to demonstrate specific skills or competencies, rather than simply memorizing facts or demonstrating academic knowledge. Competency-based education is becoming increasingly popular around the world, as it is seen as a more effective way to ensure that students are actually learning and applying the knowledge and skills they are supposed to be learning. This approach has been shown to lead to better outcomes in terms of student achievement, as well as improved critical thinking and problem-solving skills. In addition, Onrich,(2019) added

that, it can also lead to more equitable learning opportunities, as students are not simply judged by their grades or test scores, but rather by their ability to demonstrate their skills and knowledge. In mathematics education, this has led to a shift towards more problem-solving, critical thinking, and real-world applications. In many countries, including Zimbabwe, the implementation of CBC has been met with both challenges and opportunities. In general, teachers have expressed concern about a lack of resources and training, as well as a need for more support and guidance in implementing the curriculum. Therefore, the need for the researcher to look into the teacher's perceptions on the implementation of this competence based curriculum in Mathematics.

In Africa, there has been a move towards CBC in many countries, including Zimbabwe, South Africa, Kenya, and Ghana. In general, the implementation of CBC has been slower and more challenging in Africa than in other regions, due to a number of factors. Corid,(2020) says that, these include a lack of financial resources, teacher training, and support systems, as well as cultural and linguistic diversity within countries. Despite these challenges, there has been a growing recognition of the importance of CBC in mathematics education, particularly in terms of preparing students for the 21st century workforce. According to Org,(2020), One of the key challenges in implementing CBC in mathematics education in Africa has been a lack of teacher training and support. Many teachers have not received adequate training on how to teach mathematics using a competency-based approach, and there has been a lack of instructional materials and support systems to help them implement the curriculum. In addition, there has been a lack of alignment between the content and learning objectives of the curriculum and the available assessment tools, making it difficult to measure student progress. In some cases, teachers have also reported feeling overwhelmed by the shift from a traditional rote-learning approach to the more practical approach.

Hence, the researcher need to know if the shift has brought different perceptions towards the teaching and learning of mathematics.

Kandidza,(2021) says that, In Zimbabwe, the implementation of CBC in mathematics education began in 2017. The curriculum is based on the Cambridge Mathematics curriculum, and is designed to provide a more practical and applied approach to mathematics learning. However, the implementation of CBC has been met with a number of challenges. Muyati,(2020) says that, these include a lack of textbooks and other instructional materials, a lack of teacher training, and a lack of support from the government and other stakeholders. In addition, the curriculum has been criticized for being too theoretical and not taking into account the specific needs of students in Zimbabwe. Some teachers have also reported feeling overburdened by the additional workload associated with implementing the CBC. While there have been challenges, there have also been some positive aspects of the implementation of CBC in Zimbabwe. For example, the curriculum has led to increased student engagement, and has also provided opportunities for more collaborative and creative learning. In addition, Kandidza,(2021) says that, some teachers have reported that the new curriculum has allowed them to explore more innovative teaching methods. However, it is clear that there is still much work to be done to fully realize the potential of CBC in Zimbabwe. To be successful, the government and other stakeholders need to provide the necessary resources and support to teachers, as well as create a more flexible and adaptive curriculum. Therefore, the researcher needs to know the teacher's perceptions towards the competency-based curriculum in mathematics.

Cherub,(2020) says that, competency-based curriculum in mathematics is very important for several reasons. First, it allows students to develop a deeper understanding of mathematical concepts and principles, rather than just memorizing facts and formulas. This type of learning helps

to prepare students for real-world applications of mathematics, and can lead to more creative and innovative thinking. In addition, Ord,(2019) says that, a competency-based approach can help to identify and address gaps in students' knowledge, and can provide more individualized support to students who need it. Finally, a competency-based curriculum can encourage students to take ownership of their learning, which can lead to increased motivation and engagement. One of the main goals of a competency-based curriculum in mathematics is to move away from rote memorization and towards a deeper understanding of the subject. Rote memorization is often not very effective in terms of long-term learning, as students may forget what they have learnt as soon as they are no longer being tested on it. A competency-based approach encourages students to apply mathematical concepts and principles to real-world situations, which helps to solidify their understanding and make the learning more meaningful. In addition, by focusing on competencies rather than just grades, a competency-based curriculum can help to reduce anxiety.

1.2 Statement of the problem

There is limited research on how teachers in Zimbabwe perceive and implement the competence based curriculum, especially when it comes to teaching mathematics. This lack of understanding and familiarity with the new curriculum may negatively impact student learning outcomes and hinder the effective implementation of the curriculum. However, based on similar studies in other countries, it is more likely that teachers face challenges in implementing the curriculum, such as lack of training and resources, as well as a lack of familiarity with the new approach. Additionally, some teachers may have concerns about whether the new curriculum will be effective in preparing students for higher level mathematics. Overall, more research is needed to understand how teachers perceive and adapt to the new curriculum, and how it impacts student learning outcomes.

1.3 Research objectives

The researcher is aimed to fulfill the following objectives:

1. To comprehend teachers' perceptions of the competence based curriculum, and how it differs from previous curricula.

2. To identify the challenges and barriers that teachers face in implementing the competence based curriculum, especially when teaching mathematics.

3. To explore the factors that influence teachers' attitudes and readiness to adopt the new curriculum.

4. To evaluate the impact of the competence based curriculum on student learning outcomes, particularly in mathematics.

1.4 Research Questions

The researcher is aimed to answer the following questions:

1. What are teachers' perceptions of the competence based curriculum, and how does it differ from previous curricula?

2. What challenges do teachers face in implementing the competence based curriculum, especially when teaching mathematics?

3. What factors influence teachers' attitudes and readiness to adopt the competence based curriculum?

4. What is the impact of the competence based curriculum on student learning outcomes, particularly in mathematics?

1.5 Significance of the study

This study will be significant for mathematics teachers in several ways. First, it will provide a greater understanding of the competence based curriculum and how it differs from previous curricula. This will help teachers to adapt their teaching methods and strategies to better meet the requirements of the new curriculum. Secondly, the study will identify the challenges that teachers face in implementing the new curriculum, and provide recommendations on how to address these challenges. Thirdly, the study will explore the factors that influence teachers' attitudes and readiness to adopt the new curriculum, which can help to inform professional development initiatives.

The study is also significant to mathematics learners. The significance of this study for mathematics learners is two-fold. Firstly, it will provide insight into the impact of the competence based curriculum on student learning outcomes. This will help to identify areas where learners may need additional support or resources in order to succeed. Secondly, the study will provide a better understanding of the ways in which the competence based curriculum differs from previous curricula, which can help learners to understand how to best approach their learning. This understanding can help to increase student motivation and engagement, leading to improved learning outcomes.

Curriculum planners will also benefit from the findings of this study; the study will provide an understanding of the challenges that teachers face in implementing the competence based curriculum, which can help curriculum planners to address these challenges in future revisions. The study will identify areas where the competence based curriculum is not meeting the needs of teachers or learners, which can be addressed in future revisions. Also, the study will provide insight

into the factors that influence teacher readiness and attitude towards the new curriculum, which can inform curriculum planning and professional development.

1.6 Assumptions

The researcher assumes that permission will be granted to carry out this study in Marondera District, Igava cluster schools. The researcher also assumes that the respondents are willing to participate and provide valid and reliable data to the study.

1.7 Limitations of the study

The main limitation of this study was that it was conducted in a single context, in this case Marondera. This means that the findings may not be generalizable to other contexts. Additionally, the study will focus on mathematics teachers and learners, so the findings may not be applicable to other subject areas. Finally, the study will focus on the competence based curriculum as it exists in the present moment, and may not capture changes that may occur in the future. It is important to consider these limitations when interpreting the findings of the study.

Time is also another limitation to this study, one of the main limitations in terms of time is that the research will need to be conducted within a specific timeframe. This means that there may not be enough time to collect all of the data that is needed to fully explore the topic. Additionally, the time constraint may limit the scope of the research and the depth of the analysis. To address this limitation, the research will focus on the most essential aspects of the topic, and use efficient methods of data collection and analysis. This will allow the research to be completed within the given timeframe, while still providing valuable insights into the topic.

1.8 Delimitations of the study

One way to de-limit the study would be to focus on a specific sub-topic within the broader topic of the implementation of the competence based curriculum. For example, the study could focus on one specific aspect of the curriculum, such as assessment, rather than attempting to cover all aspects of the curriculum. This would allow for a more in-depth and detailed analysis of the selected sub-topic, while still providing useful insights for curriculum planners and policymakers. Another way to de-limit the study would be to conduct a case study of a single school or district, rather than attempting to cover the entire country. In addition, the researcher is familiar with the geographical location of this study that is Marondera high school which means that, it shall be easy for the researcher to identify the participants of the research.

1.9 Definition of key terms

Competency-based curriculum

According to Cort,(2020), a competency-based curriculum is a type of educational program that is designed around specific competencies or skills that students are expected to acquire. It is different from a traditional curriculum, which typically focuses on knowledge and content mastery. In a competency-based curriculum, the emphasis is on what students can do with the knowledge and skills they have learned, rather than simply memorizing facts or information. The goal is for students to be able to apply their learning in real-world contexts and demonstrate their competency through a variety of assessments.

Teachers' perceptions

Lordwin,(2021), the term "teachers' perceptions" refers to the way that teachers view or understand something, such as a new curriculum or a particular teaching method. It is important to understand

teachers' perceptions because they can influence how the curriculum is implemented and how effective it is in achieving its goals. For example, if teachers do not have a positive perception of a new curriculum, they may be less likely to fully implement it or to use it in a way that is most beneficial to students. Understanding teachers' perceptions can help to ensure that new curricula are implemented in the most effective way possible.

1.10 Summary

This chapter has introduced the research problem and background of the study. The chapter has also presented the research objectives and research questions. The importance of the study, limitations and delimitations of the study has also been outlined in this chapter. The chapter has also given the assumptions of the study. The following chapter, chapter 2 will present the discussion of the literature related to the study.

CHAPTER 2

LITERATURE REVIEW

2.0. Introduction

This chapter is going to give the review of the related literature in relation to the perceptions on the implementation of the competence based curriculum to the teaching and learning of Mathematics at ordinary level. The researcher shall give teachers' perceptions of the competence based curriculum, how it differs from previous curricula, challenges teachers face in implementing the competence based curriculum, especially when teaching mathematics, factors influencing teachers' attitudes and readiness to adopt the competence based curriculum as well as the impact of the competence based curriculum on student learning outcomes, particularly in mathematics

2.1. Theoretical framework

One theoretical framework that has been used to study the implementation of the competence based curriculum is the Concerns-Based Adoption Model (CBAM). According to, Erk, (2020), CBAM is a model that describes the stages of change that individuals and organizations go through when adopting a new innovation. In the context of education, the CBAM framework has been used to study teachers' reactions to curriculum change. According to CBAM, there are six stages of concern: awareness, informational, personal, management, consequence, and collaboration. Rarb, (2019) says that, the CBAM framework is important to consider when studying the implementation of the competence based curriculum because it can help to explain why some teachers are more successful at adopting the new curriculum than others. The theory can also help to identify areas where teachers need additional support and training. In addition, the CBAM framework can provide insight into how the curriculum can be more effectively implemented in the future.

2.2. Teachers' perceptions of the competence based curriculum, and how does it differ from previous curricula.

The study by Sirack, (2018) shows that, teachers' perceptions of the competence based curriculum in Zimbabwe differ in several ways from their perceptions of previous curricula. One key difference is that the competence based curriculum is designed to be more learner-centered, focusing on developing learners' knowledge, skills, and attitudes. The learner-centered approach is a major shift from the traditional, teacher-centered approach of previous curricula. According to the study by Lerk, (2018), the learner-centered approach recognizes that learners have different learning styles and needs, and it aims to provide a more individualized learning experience that is tailored to each student's abilities and interests. It also recognizes that learners need to be actively involved in their own learning, rather than simply being passive recipients of information. This is different from previous curricula, which was often more focused on transmitting information to learners.

Additionally, Riam, (2020) says that, the competence based curriculum is more flexible and allows for more creativity and innovation in teaching. This is another important difference from the previous curricula, which often had a rigid, prescriptive approach to teaching. The flexibility of the competence based curriculum allows teachers to adapt their instruction to the needs and interests of their learners, and to use a variety of teaching methods and strategies to promote student learning. A study by Hork, (2020) shows that there are several ways that teachers can adapt their instruction to meet the needs of their learners within the competence based curriculum. Teachers can use differentiated instruction to meet the needs of learners with different abilities and learning styles. They can also use formative assessment to continuously monitor progress and adjust their instruction accordingly. Lert, (2020) argues that, teachers can provide learners with a

variety of learning resources, including online and offline material, to support their learning. Teachers can also use a variety of teaching methods, including group work, project-based learning, and inquiry-based learning, to promote student engagement and learning. By so doing, teaching can be more enjoyable and engaging for both teachers and learners.

A study by Lorbin,(2020) shows that, another key difference between the competence based curriculum and previous curricula is the emphasis on assessment. The competence based curriculum places more emphasis on formative assessment, which involves assessing learners' progress and providing feedback to help them improve. Lort, (2020) says that, this type of assessment allows teachers to identify areas where learners need more support, and to adjust their instruction accordingly. This is different from previous curricula, which often focused on summative assessment, which simply tested learners' knowledge and provided a grade. In addition, as proposed by Lerb, (2020), in the traditional teacher-centered curriculum, the focus was on measuring learners' knowledge and skills at the end of a lesson or unit. Thus the shift to formative assessment is intended to help learners become more self-directed learners and to ensure that they are mastering the competencies that are important for their future success.

A study by Harbin, (2020) shows that, another difference is the focus on competencies rather than content. The competence based curriculum emphasizes that learners should learn specific competencies, such as problem solving and critical thinking, rather than simply intenalising content. An example of how the competence based curriculum emphasizes competencies over content is in the way that mathematics is taught. Instead of just memorizing multiplication tables, students may be asked to solve a real-world problem that requires them to apply their mathematical skills. This is a significant shift from previous curricula, which often emphasized memorization and regurgitation of content. The goal of the competence based curriculum is to develop learners

that are able to apply their knowledge and skills in real-world situations, rather than just memorizing facts and formulas.

Gort, (2017) states that another difference is the use of authentic learning experiences. In the competence based curriculum, learners are expected to engage in authentic learning activities that are relevant to their lives and future careers. Taking for example teaching learners about measurement. Arib, (2020) says that, in the traditional curriculum, learners were being taught about the metric system, including how to convert different units of measurement. However, in the competence based curriculum, learners are given a real-world problem to solve that involves measuring and calculating. For example, they might be asked to design a new playground and need to figure out how much material to order. Ikom, (2021) says that, this type of learning requires learners to apply their knowledge and skills in a meaningful context. This might include projects, simulations, and other hands-on activities. This is different from previous curricula, which often used more abstract and decontextualized learning experiences. The use of authentic learning experiences is intended to make learning more meaningful and relevant for learners.

2.3. Challenges being faced by teachers in implementing the competence based curriculum, especially when teaching mathematics.

Siab, (2020) cited that, there are several challenges that teachers face when implementing the competence based curriculum, particularly when it comes to mathematics. One challenge is the need for a different mindset about teaching and learning. Many teachers have been trained to teach using a traditional, teacher-centered approach, and it can be difficult to shift to a more learner-centered approach. A study by Diat, (2022) shows that, in a traditional, teacher-centered approach to education, the teacher is the only one who holds the knowledge and authority in the classroom. Learners are expected to listen and absorb the information they are given by the teacher as he

lectured in front of the classroom whereas learner-centered approach, the focus shifts to the learners. The teacher acts as a facilitator and guide only helping learners to explore and discover new ideas. Learners are expected to be active participants in the learning process, asking questions and sharing their ideas.

Additionally, Gert, (2021) says that, the shift to a competence based curriculum requires a change in the way that assessment is done, and teachers need support in developing new assessment methods. In a traditional, content-based curriculum, assessment was often done through tests and quizzes. Lorb, (2019) says that, the goal is to measure learners' knowledge and understanding of specific content. In a competence based curriculum, assessment is done through a variety of methods, including observation, portfolios, and performance-based tasks. The goal is to measure learners' ability to apply their knowledge and skills in real-world situations. This can be a challenge for many teachers who are used to the traditional assessment methods.

Axcording to Hilart, (2019), another challenge that teachers face when implementing a competence based curriculum is finding the time and resources to create and implement new lessons and activities. In a traditional curriculum, teachers relied on textbooks and worksheets that have already been developed. In a competence based curriculum, teachers need to create lessons and activities that are specifically designed to help learners develop the competencies they need. Munongeri, (2020) says that, to create lessons and activities that are aligned with a competence based curriculum, teachers need to consider the specific competencies that learners need to develop. For example, in mathematics, learners might need to develop competencies like problem solving, reasoning, and communicating mathematically. According to Mhashu, (2020), teachers can then design lessons and activities that focus on developing these competencies, rather than just teaching specific math concepts. This might involve using real-world problems, allowing

learners to work in groups, and encouraging them to explain their thinking. This can take time and effort, and may require additional training and support.

Siab, (2020) states that, another challenge in implementing a competence based curriculum is the need for ongoing assessment and feedback. In a traditional curriculum, assessment was often done after a test or quiz whereas in a competence based curriculum, teachers need to be constantly assessing learners' progress and providing feedback to help them improve. According to Jolos, (2018), the shift from summative assessment to formative assessment is one of the biggest changes in implementing a competence based curriculum. Summative assessment is often seen as a one-time event, while formative assessment is an ongoing process. This shift seems to be difficult for teachers, who may not be used to providing frequent feedback and adjusting their instruction based on learners' progress. This requires a lot of time and effort on the part of the teacher, and it can be difficult to find the time to do this in an already busy classroom.

Rebin, (2020) says that, another challenge of implementing a competence based curriculum is the need for collaboration and professional development. In a traditional curriculum, teachers often work in isolation, with little opportunity for collaboration with colleagues. In a competence based curriculum, however, teachers need to work together to design lessons, assessments, and interventions. Sirt, (2020) argues that, they also need to collaborate with other professionals, such as counselors and support staff. In mathematics, one example of the need for collaboration in a competence based curriculum is in the development of performance tasks. According to Mert, (2020), performance tasks are open-ended problems that allow learners to demonstrate their understanding of mathematical concepts. They can be used to assess progress and to help guide instruction. However, developing effective performance tasks requires a team of teachers to work together and design tasks that are engaging, relevant, and aligned with the standards.

Orgin, (2020) says that, another challenge of implementing a competence based curriculum is the need for professional development. Teachers need to be trained in new instructional methods, such as project-based learning, problem-based learning, and inquiry-based learning. Mujoz ,(2020) says that, they also need to be trained in new forms of assessment, such as performance-based assessment and portfolio assessment. Professional development is often costly and time-consuming, and many teachers do not have the time or resources to participate in it. One example of the need for professional development in mathematics is the implementation of the Common Core State Standards. The Common Core State Standards are a set of standards that outline the knowledge and skills that learners need to be college and career ready. A study by Fert, (2020) shows that, these standards include many new concepts and skills that teachers may not be familiar with of which in order for them to teach these standards effectively, teachers need to participate in professional development opportunities, such as workshops, online courses, and study groups.

2.4. Factors influencing teachers' attitudes and readiness to adopt the competence based curriculum.

According to a study by Mark, (2019), there are a number of factors that can influence teachers' attitudes and readiness to adopt a competence based curriculum. Some of these factors include, the school and district culture. The first factor, school and district culture, is an important influence on teachers' readiness to adopt a competence based curriculum. Hoek, (2020) says that, if a school or district has a culture that is resistant to change, or that is focused on traditional methods of instruction, it will be more difficult for teachers to adopt a new curriculum. For example, if the school or district does not have a strong focus on student-centered learning, it will be more difficult for teachers to implement a competence based curriculum. Orib, (2019) says that, one way that school and district culture can influence teachers' readiness to adopt a competence based

curriculum is through the adoption of new math textbooks. If a school or district has recently adopted a new textbook that emphasizes the use of traditional methods, such as rote memorization and drill and practice, it will be more difficult for teachers to switch to a competence based curriculum that emphasizes conceptual understanding and problem solving.

Accorsing to Hilart, (2018), another factor is the level of support from administrators. The level of support from school and district administrators is a critical factor in teachers' willingness to adopt a competence based curriculum. When administrators provide support and resources for the implementation of the new curriculum, it is more likely to be successful. Okril, (2020) says that, administrators can provide this support in a number of ways, such as providing time for professional development, funding for materials and resources, and providing positive reinforcement and encouragement for teachers. Bert, (2019) says that, one way that administrator support can affect teachers' willingness to adopt a competence based curriculum is through the adoption of new standards-based assessments. For example, if a state or district has adopted a standards-based assessment that requires learners to demonstrate their understanding of concepts and skills, rather than simply recall information, it will be easier for teachers to make the switch to a competence based curriculum.

A study by Yert, (2020) shows that, another factor is the level of support from colleagues. Colleague support is another important factor in teachers' willingness to adopt a competence based curriculum. When teachers feel supported by their colleagues, they are more likely to be open to new ideas and approaches. For example, if teachers have a strong professional learning community where they can share ideas and resources, they will be more likely to be willing to try new things in their classrooms. Viator, (2020) says that, one example of how colleague support can impact teachers' willingness to adopt a competence based curriculum is through collaboration on lesson

planning. For example, if a math department has regular meetings where teachers share lesson plans and ideas, it will be easier for them to integrate the new curriculum into their own classrooms. This kind of collaboration allows teachers to share their ideas, learn from each other, and create a culture of professional growth.

Orik, (2019) shows that, another important factor is the amount of time that teachers have to implement a new curriculum. If teachers are already feeling overwhelmed with the demands of their job, they may not be willing to take on the extra work of implementing a new curriculum. This is especially true for math teachers, who often have to deal with large class sizes and a heavy workload. Ochars, (2022) says that, if teachers do not have enough time to plan and prepare for a new curriculum, they are less likely to be successful in implementing it. One example of how a lack of time can affect teachers' willingness to implement a new curriculum is with the adoption of new teaching strategies. For example, if a teacher is required to use the flipped classroom model, which requires students to watch instructional videos at home and then complete their homework in class, they may not have enough time to create the videos or to find the right resources for their learners. This can make it difficult for them to implement the new curriculum effectively.

Accirding to Munongeri, (2018), another factor is the level of support that teachers receive from parents and the community. If parents and the community are not supportive of the new curriculum, teachers may feel that they are facing an uphill battle. They may feel like they are not getting the respect and support they need to do their job well. Mhashu, (2020) says that, this can make it difficult for them to adopt a new curriculum, even if they want to. One example of this is when a school district tried to adopt a new math curriculum that required students to use a different type of textbook. The parents were not supportive of the new curriculum, and they voiced their

concerns to the school board. The school board responded by not funding the new textbooks, which meant that the teachers could not implement the new curriculum.

2.5. The impact of the competence based curriculum on student learning outcomes, particularly in mathematics.

There is some research by Berdwin, (2020), that suggests that students who are taught using a competence based curriculum, particularly in mathematics, have improved learning outcomes. One theory is that a competence based curriculum helps to motivate learners by making learning more relevant to their lives and by focusing on developing skills and competencies that they can use in the real world. One study by Cirat, (2018), found that students in a competence based curriculum had higher scores on standardized tests than learners in a traditional curriculum. The study compared the performance of learners in two different middle schools, one that was using a traditional curriculum and one that was using a competence based curriculum. The study found that those using competence based curriculum had higher scores on standardized tests in both math and reading. This study provides some evidence that the curriculum can have a positive impact on learning outcomes.

In addition to improved learning outcomes, Erkm, (2020) says that, another impact of the competence based curriculum is increased engagement and motivation among learners. The curriculum is designed to be more active and participatory, which can make learning more fun and engaging. This can be particularly beneficial for learners who have struggled with traditional, passive learning environments. Research by Mort, (2018) suggests that active learning, which is encouraged by the competence based curriculum, can have a variety of positive effects on learners. For example, it can increase motivation, improve self-confidence, and lead to better retention of

information. The curriculum can also help to improve social skills and interpersonal relationships, as learners work together to solve problems and complete tasks.

Bert, (2020) says that, another impact of the competence based curriculum is a change in how teachers view their role. Instead of being the "sage on the stage," teachers become the "guide on the side." This means that they are no longer the primary source of information, but rather help to guide learners as they learn through their own exploration and discovery. This shift in the teacher's role can be a big adjustment for some teachers. It requires a different mindset and a different set of skills. For example, teachers need to be able to facilitate discussion and collaboration, and to provide guidance and feedback without taking over the learning process.

2.6. Knowledge gap

While there is some research on the implementation of the curriculum in general, there is a lack of research specifically on teachers' perceptions in the context of Mathematics education at the ordinary level. This gap in knowledge makes it difficult to understand the challenges and opportunities that teachers face when implementing the curriculum.

2.7. Chapter summary

This gave the review of the related literature in relation to the perceptions on the implementation of the competence based curriculum to the teaching and learning of Mathematics at ordinary level. The researcher gave teachers' perceptions of the competence based curriculum, and how does it differ from previous curricula, the challenges teachers face in implementing the competence based curriculum, especially when teaching mathematics, factors influencing teachers' attitudes and readiness to adopt the competence based curriculum as well as the impact of the competence based curriculum on student learning outcomes, particularly in mathematics

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

This chapter is based on the research methodology. The researcher shall highlight the research paradigm to be used in this research that is interpretivist paradigm. The approach to be used in this research shall be highlighted thus qualitative research as well as research design which is a case study. The researcher shall also highlight the population of the study, sample and sampling techniques, research instruments, data gathering procedures, data analysis procedures as well as ethical considerations

3.1 Research Paradigm

The researcher shall use interpretivist research paradigm. According to Denzin and Lincoln, (2018), the interpretivist paradigm is a research paradigm that focuses on understanding and interpreting the meanings that individuals assign to their experiences and the world around them. Colhon,(2018) says that, Interpretivists believe that reality is socially constructed and that there is no single objective reality. Instead, they believe that individuals construct their own realities based on their experiences, values, and beliefs. In interpretivist research, the researcher's goal is to understand these realities from the perspective of the people being studied. This is often done through methods like interviews, observations, and document analysis. Orpin,(2019) argues that, the interpretivist paradigm is important in this research because the researcher is trying to understand the experiences and perceptions of the people involved in the implementation of the competency-based curriculum. Kiry,(2020) says that, the researcher is interested in understanding how they've experienced the process and how they perceive its impact on their work and learning.

The interpretivist approach allows this researcher to explore these questions from their perspective and gain a deeper understanding of the complex realities of implementing a new curriculum.

According to Hert,(2019), there are several advantages of the interpretivist paradigm for research in that it allows one to gain a rich, in-depth understanding of the experiences and perceptions of the research participants. It also recognizes that people's realities are complex and multifaceted, and it allows one to explore those nuances. Thirdly, it allows one to gain insights into the meanings that people assign to their experiences, which can help you understand why they make the decisions they do. Last but not least, it allows you to uncover unexpected findings that might not be possible with a more structured approach..

Based on the information provided, the research will be within the interpretivist paradigm. Interpretivist research seeks to understand phenomena from the perspective of the people experiencing them. In this case, the researcher will be studying the implementation of the curriculum from the perspective of the teachers and students in a few secondary schools in Marondera district. The reseacher will be looking at their experiences and perceptions to gain a deeper understanding of the implementation process.

3.2 Research approach

The researcher shall use qualitative research approach in this study. Based on the interpretivist paradigm, a qualitative research approach would be the most appropriate for this study. Ally,(2020) says that, Qualitative research is a type of research that focuses on understanding the experiences, perceptions, and meanings of research participants. It is often used to explore complex and nuanced issues that can't be easily quantified. In this case, the researcher is interested in exploring the experiences and perceptions of teachers and students regarding the

implementation of the new curriculum. A qualitative approach would allow the researcher to gain in-depth insights into these experiences and how they're shaped by the individuals' perspectives.

According to Lort,(2019), there are several advantages of using a qualitative approach in this research. Firstly, it allows the researcher to understand the experiences and perceptions of the research participants in detail, which is particularly important in this case, given the complex nature of the topic. Secondly, it allows the researcher to capture the richness and diversity of the participants' experiences, which can't be captured through quantitative data alone. Thirdly, it allows the researcher to explore unexpected or unanticipated findings that might not be possible with a more structured approach. However, Mert,(2019) says that, the main drawback of using a qualitative approach in this research is that it can be time-consuming and labor-intensive. This is because the researcher need to collect and analyze a lot of data, and it can take a long time to make sense of the information. Additionally, it can be difficult to ensure the reliability and validity of the findings, given the subjective nature of the research. Another potential drawback is that it can be difficult to generalize the findings to other contexts, given the small and specific sample size.

3.3 Research design

For this research, a case study design would be the most appropriate research design. According to Loncoln,(2018), A case study is a type of qualitative research that focuses on a specific case or situation, like the implementation of the competency-based curriculum in this study. The case study design allows the researcher to explore the topic in depth, and to draw out key themes and insights from the data. In this case, the researcher could use multiple methods of data collection, such as interviews, observations, and document analysis. This would allow the researcher to gain a rich and comprehensive understanding of the experiences and perceptions of the participants. One of the key advantages of a case study design is that it allows the researcher to explore a topic

in depth and in context. This is particularly important for complex topics like the implementation of the competency-based curriculum, where there are many different factors at play. Another advantage is that it allows the researcher to capture the voices and perspectives of the participants in a more authentic way. This can lead to more nuanced and detailed findings. However, Actin ,(2019) says that, One of the main disadvantages of a case study design is that it can be difficult to generalize the findings to a wider population. Since the researcher is studying a specific case, the findings may not apply to other contexts or situations. Additionally, Sert,(2020) says that, it can be difficult to replicate a case study design, making it difficult to replicate the findings. Another disadvantage is that it can be time-consuming and resource-intensive, given the in-depth nature of the research.

3.3 Population of the study

The population of the study are fifteen teachers from three different secondary schools in Marondera district who are directly involved in the implementation of the competency-based curriculum. This population would be most appropriate, as they would have the most direct experience and knowledge about the curriculum and its impact. Using teachers and learners as the population of the study is important for a number of reasons. Firstly, they are the direct participants in the curriculum implementation, so they have first-hand knowledge and experience. Secondly, their perspectives and experiences can provide valuable insights into the impact of the curriculum on teaching and learning. Thirdly, having teachers from both urban and peri-urban schools as the population can help to ensure the findings are directly relevant to the real-world situation. In terms of the number of teachers to be included in the study, it would be appropriate to involve all the mathematics teachers from the selected three secondary schools. This would help to ensure that a range of perspectives and experiences are included, and that the sample is not biased towards any

particular group of teachers. A sample size of around twelve mathematics teachers shall be suitable for a case study design, as it would allow for interviews and data collection, while also being manageable in terms of data collection. This sample size would allow for group discussions and observations of the curriculum implementation.

3.4 Sample

For this research, a purposive sampling technique would be most appropriate. This technique involves deliberately selecting participants based on their specific characteristics, such as their role in the curriculum implementation. This would ensure that the participants are relevant and can provide valuable insights into the research topic. This technique would also allow for a smaller sample size, while still providing a rich and diverse range of perspectives. There are a number of advantages to using purposive sampling in this research. It can help to save time and resources, as it allows the researcher to target a specific group of participants who can provide the most relevant information. It can also help to ensure that the participants have the knowledge and experience necessary to contribute meaningfully to the research. Thirdly, it can help to reduce bias, as the researcher can select participants based on specific criteria. Overally, this sampling technique can help to ensure that the research is focused and efficient.

3.4.1.Sampling techniques

The participants for this study were selected using purposive sampling, a non-probability technique. The researcher intentionally selected 5 mathematics teachers and 10 ordinary level mathematics learners from Marondera High School, Zimbabwe. The teachers were chosen based on their experience in teaching mathematics at the ordinary level and their involvement in the implementation of the competence-based curriculum. The learners were selected based on their enrollment in mathematics classes at the ordinary level and their willingness to share their

experiences and perceptions of the competence-based curriculum. Marondera High School was selected as the study site due to its proximity and convenience, allowing for ease of data collection.

3.5 Research instruments

3.5.1 Questionnaire

A questionnaire is a research instrument that consists of a series of questions designed to gather information from respondents. Carit,(2017) says that, it is usually in a written or electronic format, and is often self-administered by the respondents. Questionnaires can be closed-ended, with a set of predefined responses, or open-ended, where respondents can provide their own answers. They can also be structured, with a fixed order of questions, or unstructured, where the questions can be answered in any order. In this case, a closed-ended, structured questionnaire can be used to gather data on the perceptions and experiences of the mathematics teachers. According to Heit,(2019), there are a number of advantages of using a questionnaire in this study of the competency-based curriculum. Firstly, it is an efficient and cost-effective way to collect a large amount of data from a large number of respondents. Secondly, it is easy to administer, and can be done quickly and easily. Thirdly, it allows for data to be collected in a standardized and consistent way, which can make it easier to compare and analyze the results. Fourthly, it can be less intrusive and more anonymous than other data collection methods, which may be important for sensitive topics such as education. Orb,(2020) says that, there are also some disadvantages of using a questionnaire in this study. Firstly, it can be difficult to ensure that all the respondents understand the questions and answer them in the same way. Secondly, the data collected may not be as in-depth or detailed as other data collection methods, such as interviews or observations. Thirdly, questionnaires may not capture all the nuances and complexities of the topic, and can only provide limited insights. Fourthly, there is always the possibility of response bias, where respondents may not answer

honestly or accurately. Hence, due to these limitations, the researcher shall accompany questionnaire with interviews.

3.5.2 Face to face interviews

According to Bart,(2019), a face-to-face interview is a data collection method in which the interviewer and the respondent are in the same physical location and communicate in person. Lart,(2019) argues that, the interviewer asks the respondent a series of questions, and the respondent responds verbally. Face-to-face interviews can be either structured, with a pre-determined set of questions, or unstructured, where the interviewer can ask follow-up questions or explore topics in more depth. There are several advantages of using face-to-face interviews especially in this study of the competency-based curriculum. One, they allow for a high level of interaction and communication between the interviewer and the respondent, which can result in richer and more detailed data. Two, they allow for non-verbal cues to be observed, which can provide additional insights into the respondent's answers. Three, they allow for more complex and probing questions to be asked, which can lead to more nuanced and detailed answers. Finally, they allow for more detailed exploration of the respondent's experiences and views.

3.6 Data collection procedures

The researcher shall gather information using questionnaires first. The teachers shall be responsible for answering the questionnaire. Giving learners a questionnaire can be an important data gathering procedure in this study for a few reasons. Firstly, it can help the researcher to gather a large amount of data from a large number that specific group of teachers, which can be useful for establishing general trends and patterns. It can also help the researcher to collect data that is more objective and less influenced by the interviewer, as the respondents are providing their answers independently. Another reason is that, it can be a more efficient and cost-effective way to

gather data from a large number of learners. It is important to note that, after the questionnaire session, the researcher shall conduct a face to face interview with the same teachers. There are several advantages of using face-to-face interviews with teachers in this study and these include, building rapport and trust with the teachers, which can lead to more honest and open responses, probing for more detailed information, allowing for better understanding of the teachers' lives experiences and perspectives on the curriculum also it can allow the researcher to observe non-verbal cues and body language, which can provide additional insights.

3.7 Data analysis procedures

The researcher shall use qualitative analysis techniques, such as thematic analysis, to identify themes and patterns in the data. Soez,(2018) says that, thematic analysis is a qualitative data analysis technique that can be used to identify and analyze patterns and themes in qualitative data. In this study, the researcher shall use thematic analysis to analyze the data from her face-to-face interviews with teachers. This could involve identifying themes related to the implementation of the curriculum, such as challenges, successes, and areas for improvement. Thematic analysis can also be used to explore how the curriculum is experienced and interpreted by different groups of people, such as teachers from different subject areas or learners from different backgrounds. Thematic analysis shall also be used to analyze data collected from questionnaires. In this case, the researcher shall use a technique called content analysis, which involves coding and categorizing responses to identify themes and patterns. For example, the researcher shall use content analysis to explore how teachers perceive the benefits and challenges of the competency-based curriculum, or how their experiences differ depending on their age, gender, or socio-economic background.

3.8 Ethical considerations

There are a few ethical considerations that the researcher shall keep in mind in this research. These include obtaining informed consent from all participants, and making sure that they understand that their participation is voluntary and that they can withdraw at any time, protecting the privacy and confidentiality of participants, and avoiding revealing any personal or identifying information, making sure that the research does not cause any harm to participants, either physically or emotionally and ensuring that the research is conducted in an ethical and transparent manner , complying with relevant ethical guidelines and regulations.

3.9 Chapter summary

The chapter was based on the research methodology. The researcher managed to highlight the research paradigm to be used in this research that is interpretivist paradigm. The research approach to be used was highlighted thus qualitative research as well as research design which is a case study. The researcher also managed to highlight the population of the study, sample and sampling techniques, research instruments that is face to face interviews and questionnaires, data gathering procedures, data analysis procedures as well as ethical considerations. Chapter 4 shall be focused on the data analysis.

CHAPTER 4

DATA PRESANTATION AND DATA ANALYSIS

4.0 Introduction

This chapter presents and analyzes the data collected from the research on exploring the gender gap in mathematics performance and achievement. The data is derived from various sources, including a comprehensive literature review, questionnaire and face to face interviews. This chapter seeks to identify patterns, trends, and relationships within the data, providing insights into the nature and extent of the gender gap in the use of competence based

4.1 Demographic variables of respondents
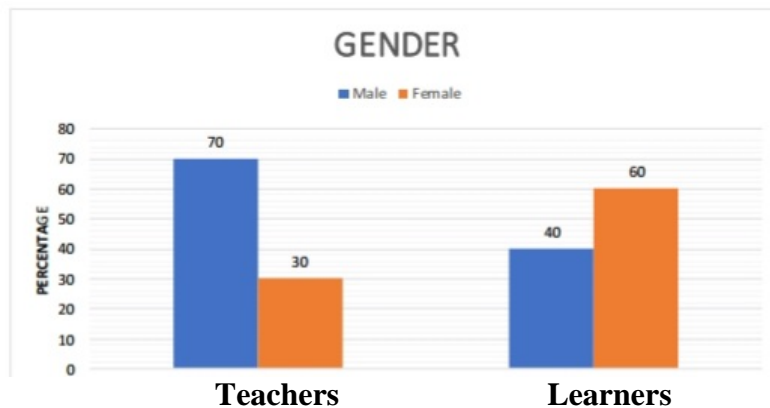
Fig 1.A bar graph showing number of participants according to gender

The graph shows that, both male and female members participated in this research and this is specifically resembling the gender balance in this research which helped the researcher to obtain valid and reliable data. Within the learners, 30% were girls and 70% were boys. The difference in terms of figures shows that, the male learners have a higher positive perception towards the competence based curriculum in mathematics. Same as to the teachers who were interviewed.

The researcher used 40% of male members and 60% of female members. In this regard, most of the female teachers participated in the research which means that, the researcher managed to obtain data from both male and female members.

4.2The number of teachers who participated in the research according to experiences

Fig.2.Pie Chart: Teachers' Experience in Teaching Mathematics
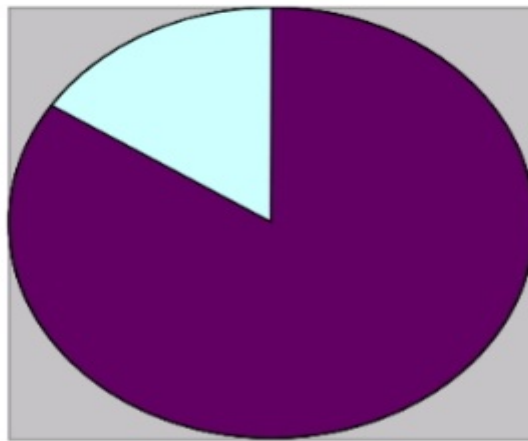
Key

Purple- teachers with the experience of 5 years and above

Blue- teachers who are less than 5 years' experience

A pie chart showing experience of teachers in teaching mathematics.

⬧ 20% of the teachers have less than 5 years of experience.

⬧ 80% of the teachers have 5 years or more of experience.

This pie chart illustrates the distribution of experience levels among the teachers in the sample, highlighting that the majority of the participants are experienced educators in the field of

mathematics. The data suggests that the majority of teachers in this sample have substantial experience in teaching mathematics, which may impact their perceptions and experiences with the competency-based curriculum. Indeed, several researchers have suggested that teacher experience can influence their views on curricular changes. In their study on curriculum reform in Canada, Clark and Murphy (2017) found that experienced teachers were more likely to resist change, preferring to maintain their tried-and-tested teaching methods. A study by Lei . (2015) in Singapore showed that teachers with more experience were more comfortable with the curriculum and less likely to perceive it as challenging. This suggests that the substantial experience of the teachers in this sample may play a role in their perceptions and experiences with the competency-based curriculum.

4.3 Teachers' perceptions of the competence based curriculum, and how it differs from previous curricula.

Table 1. The difference between +competences based curriculum and the previous curricula.

Difference	Number of participants who agreed	Number of participants who disagreed	Percentage of participants who agreed	Percentage of participants who disagreed	Total
CBC is learner centered	4	3	4	4	15

Weight on assessment	2	5	4	4	15
Authenticity	5	3	2	5	15

The data provided suggests a difference in agreement among the teachers on the following aspects of the competency-based curriculum. 4 out of 15 teachers (27%) agreed that the curriculum was learner-centered, while 3 (20%) disagreed. This suggests that teachers supported the learner-centeredness of the curriculum but also some disagreed. Only 2 out of 15 teachers (13%) agreed that the curriculum emphasized assessment, while 5 (33%) disagreed. On authenticity of learning, 33% agreed, 33% disagreed, and 33% were neutral or did not provide an answer. In summary, while there was support for the learner-centeredness of the curriculum, there was greater disagreement about the emphasis on assessment, and a more evenly split opinion on authentic learning. This data highlights some of the areas where the teachers in this sample had divergent opinions on the competency-based curriculum, which may be worth exploring further in analysis and discussion of the findings. Several researchers have argued that teachers' perceptions of curricular changes are influenced by a range of factors, including their beliefs about teaching and learning. For example, Resnick (2019) argued that teachers' beliefs about how students learn can influence their views on curricular changes. Teachers who believe that students learn best through direct instruction, for example, may be less likely to support a learner-centered curriculum. Ball and Cohen (2019) suggested that teachers' professional identity can influence their attitudes towards curricular changes.

4.4 Challenges faced by teachers in implementing competency-based curriculum

Fig 3. A pie chart showing challenges faced by teachers in teaching competence based curriculum.
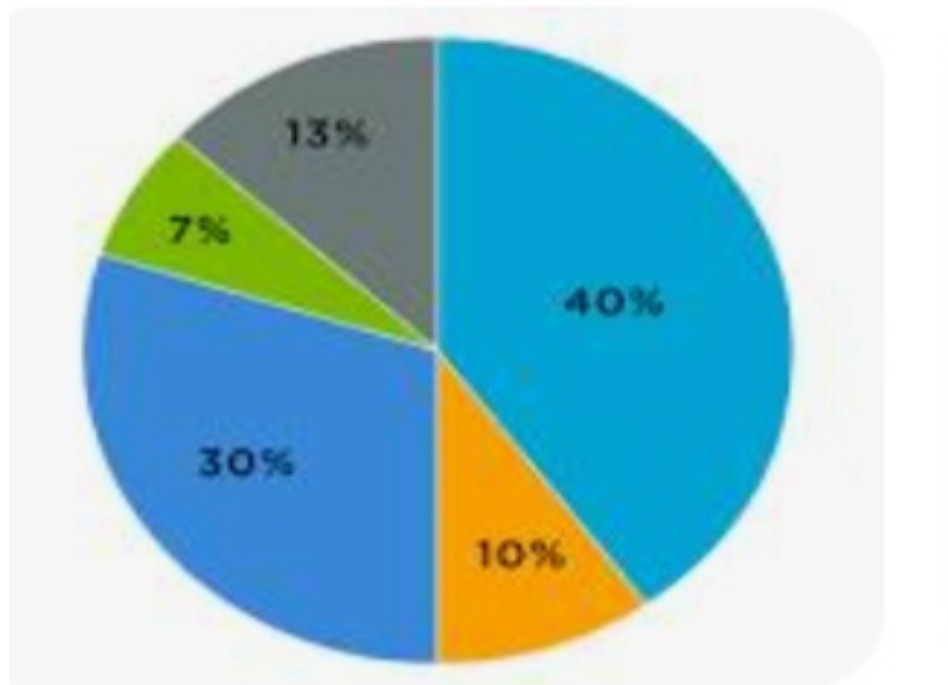
Key

40% sky blue- Resistance to change.

30% light blue-Time constraints.

13% grey- Lack of resources

10% yellow- Assessment

7%green- Student readiness

The pie chart highlights 5 significant challenges that teachers face in using the competency-based curriculum, with resistance to change being the most common challenge. The significant proportion of teachers who resist change suggests that there may be a lack of buy-in or support for

the new curriculum among some educators. This can make it difficult for schools to effectively implement the competency-based approach and may lead to uneven implementation across classrooms or schools. The resistance to change among some teachers can have a number of consequences for the effective implementation of the competency-based curriculum. First, inconsistent implementation can be a significant problem, as learners may receive different learning experiences and expectations depending on the teacher. This can result in an uneven educational experience, which can ultimately hinder learning and progress. Additionally, resistance to change can lead to wasted resources. If teachers are not engaged with the curriculum, they may not effectively utilize resources such as professional development or curriculum materials, leading to inefficiencies and wasted opportunities to improve student learning. There is significant research supporting the challenges faced by teachers who resist change thus Hattie (2019) found that teachers' attitudes and beliefs are significant factors in determining their engagement with curricular changes. Tyack and Cuban (2015) argued that teachers' perceptions of educational reforms can be shaped by their professional culture, which may reinforce resistance to change. In addition, research by Stake and Easley (2018) highlighted the importance of leadership in facilitating change, as it can provide support and address teachers' concerns.

Time constraints and lack of resources are also significant issues, highlighting the need for adequate training and support for teachers to successfully implement the new curriculum. Indeed, time constraints and lack of resources can be significant barriers to successful implementation of the competency-based curriculum. Time constraints, such as limited planning time and increased workload, can make it difficult for teachers to fully engage with the new curriculum. This can result in a superficial understanding of the curriculum or a lack of time to plan and prepare effective lessons that incorporate the new approach. Similarly, lack of resources, such as inadequate training

or insufficient materials, can hinder teachers' ability to fully implement the curriculum. Without adequate resources, teachers may struggle to adopt new teaching methods or find ways to assess the progress of learners. Research has highlighted the importance of time and resources in facilitating effective curricular implementation. Hiebert, (2017) found that teachers with more time for planning and collaboration were more likely to implement curriculum changes effectively. Darling-Hammond (2018) identified a range of resources, including professional development and coaching, that were associated with successful curriculum implementation. Both of these studies emphasize the importance of providing teachers with the time and resources they need to effectively engage with and implement curricular changes.

The data in the pie chart indicates that 13% of teachers reported lack of resources as a significant challenge in implementing the competency-based curriculum. While this may seem like a relatively small percentage, it represents a significant number of teachers who may be struggling to access the necessary resources to effectively teach using the curriculum. Lack of resources can include a range of issues, such as insufficient training, inadequate materials, or limited technological support. Overall, this highlights the importance of ensuring that all teachers have the support and resources they need to effectively implement the new curriculum and provide high-quality learning experiences for their learners.

The percentage of teachers who reported difficulties with assessment, at 10%, may seem relatively low. However, this issue is likely to have a significant impact on the implementation of the competency-based curriculum. Assessment is a crucial component of any curriculum, as it allows teachers to monitor student progress and adjust their instruction accordingly. However, in a competency-based curriculum, the focus of assessment shifts from measuring learners' performance on traditional tests to measuring their mastery of specific competencies.

The relatively low percentage of teachers reporting learner readiness as a significant challenge (7%) may seem surprising. However, this issue can have a significant impact on the implementation of the competency-based curriculum. Learner readiness refers to the ability of learners to engage with the new curriculum and master the competencies. In a competency-based curriculum, learners are expected to take more responsibility for their learning, which can be challenging to some, especially if they are not used to this approach.

4.5 The impact of the competence based curriculum on learning outcomes, particularly in mathematics.

Teacher B from an interview suggests that

"*learners who are taught using a competence based curriculum, particularly in mathematics, have improved learning outcomes. One theory is that a competence based curriculum helps to motivate them by making learning more relevant to their lives and by focusing on developing skills and competencies that they can use in the real world.* One study by Cirat, (2018), found that learners in a competence based curriculum had higher scores on standardized tests than those in a traditional curriculum. The curriculum is designed to be more active and participatory, which can make learning more fun and engaging. This can be particularly beneficial to learners who have struggled with traditional, passive learning environments.

Research by Mort, (2018) suggests that active learning, which is encouraged by the competence based curriculum, can have a variety of positive effects on students. For example, it can increase motivation, improve self-confidence, and lead to better retention of information. The curriculum can also help to improve social skills and interpersonal relationships, as learners work together to solve problems and complete tasks.

Teacher A says that,

" *another impact of the competence based curriculum is the change in how teachers view their role. Instead of being the "sage on the stage," teachers become the "guide on the side.*" This means that they are no longer the primary source of information, but rather help to guide learners as they learn through their own exploration and discovery. This shift in the teacher's role can be a big adjustment for some teachers. It requires a different mindset and a different set of skills. For example, teachers need to be able to facilitate discussion and collaboration, and to provide guidance and feedback without taking over the learning process.

4.6 Ways that can be used to uphold the competence based curriculum in mathematics

Table 2.A table showing responses on the ways that can be used to uphold the competence based curriculum in mathematics

Method	Percentage of learners who supported	Percentage of teachers who supported	Total
Professional development	40%	60%	100
Collaboration	30%	30%	60
Resources	30%	10%	40

The table provides some interesting insights into how teachers and learners perceive the methods to support the implementation of the competency-based curriculum in mathematics. Professional

development was the most supported method by teachers, with 60% indicating their support. This suggests that teachers believe that ongoing training and development can help them better understand and implement the curriculum effectively. Collaboration was supported by a lower proportion of both teachers and learners (30% and 30%, respectively), suggesting that while collaboration may be beneficial, it may not be considered as essential as professional development. The relatively low support for collaboration among teachers and learners may suggest that more needs to be done to promote collaboration as a valuable approach to support the implementation of the competency-based curriculum. Lastly, the relatively low support for resources among both teachers and learners may indicate that while resources are important, they may not be seen as the primary factor in supporting the implementation of the curriculum. This may be due to the perception that resources are not sufficient without adequate professional development or collaboration.

This shows that, there are several important methods that can be used to support the implementation of the competency-based curriculum in mathematics. Professional development is crucial for teachers to understand the curriculum and develop the necessary skills to teach using it effectively. Ongoing training and support can help teachers adapt to the new curriculum and provide high-quality learning experiences for their learners. In addition, professional development can promote collaboration among teachers, allowing them to share best practices and resources. Collaboration among teachers and learners is also an important aspect of effective implementation of the curriculum. Collaboration allows them to share ideas, develop teaching strategies, and work together to address challenges. This does not only promote a more supportive learning environment, but also helps ensure that all stakeholders are working towards the same goals and vision. Lastly, resources are essential for successful implementation. This includes not only

physical resources such as textbooks, technology, and classroom materials, but also access to support staff, such as instructional coaches or mentors, who can provide guidance and support to teachers.

Research supports the importance of these methods in supporting the implementation of a competency-based curriculum. For example, research by Hammond (2020) found that professional development is critical for teachers' understanding of new curricula, as it helps them to develop the necessary skills and knowledge to effectively implement the curriculum. In addition, Johnson (2021) found that teacher collaboration is important in improving instructional practices, particularly in the context of adopting new curricula.

4.7 Chapter Summary

In summary, this chapter has examined the perceptions of teachers and learners towards the competency-based curriculum in mathematics, with a particular focus on the challenges and ways to support its implementation. The findings suggest that both teachers and learners have a range of views towards the curriculum, with some expressing support and others expressing concerns about learner-centeredness, assessment, and authentic learning. In terms of challenges, the data indicates that resistance to change, time constraints, and lack of resources are some of the key issues faced by teachers in implementing the curriculum.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

As we near the conclusion of this paper, it is important to reflect on the findings and consider their implications for educators, policymakers, and other stakeholders. This chapter provides a summary of the key themes and findings, as well as a discussion of the limitations of the study and the potential directions for future research. It is hoped that the findings and discussions in this paper will contribute to the ongoing dialogue on competency-based curriculum and support the efforts of educators and policymakers to implement this approach in a way that is effective and equitable for all learners.

5.1 Summary of the study

According to Brown (2004) teachers' perceptions of the curriculum strongly influence how they teach and what learners learn or achieve. Thus, in this study, the subject matter to scrutinize was the Mathematics teachers' understanding of the implementation of Competence-Based Curriculum. The study sought to investigate the teachers' perceptions of competence-based curriculum, teaching methods and the challenges they face in the implementation of Competence-Based Curriculum in the teaching and learning of Mathematics at O' level.

5.2.1. Chapter summaries

Chapter 1: Background of the Study, Research Objectives, Research Questions, Statement of the Problem, Significance of the Study, Limitations of the Study, Delimitations, and Definitions of Terms. This chapter provided a comprehensive overview of the research study, including the background and context of the competency-based curriculum in mathematics, the specific research

objectives and questions, the statement of the problem, the significance of the study, the limitations, and the definitions of key terms used in the study. Chapter 3 presented an overview of the existing literature on the competency-based curriculum in mathematics and related issues. It included discussions on the benefits and challenges of implementing this curriculum, the perspectives of teachers and learners, and various factors that can influence the effectiveness of curriculum implementation. The chapter also highlighted gaps in the existing literature and provided a justification for the current study by demonstrating the need for further research in this area. Overall, the literature review provided a comprehensive background on the topic and laid the foundation for the analysis of the study's findings.Chapter 3 described the research design and methods used in this study, including the use of questionnaires for learners and interviews for teachers. It provided a detailed explanation of the data collection process, sample selection, data analysis, and ethical considerations. The chapter also justified the chosen methods and discussed their strengths and limitations in relation to the research objectives. The methodology ensured the validity, reliability, and generalizability of the findings, contributing to a comprehensive understanding of the topic. Chapter 4 presented and analyzed the data gathered from interviews and questionnaires. The data was categorized into themes that emerged from the data, including the views of teachers and students on the competency-based curriculum in mathematics, the challenges faced by teachers in implementing the curriculum, and the strategies that can support effective implementation. The chapter used quantitative and qualitative analysis to present the data and draw conclusions about the findings. Above all, the analysis provided a rich understanding of the topic and contributed to a deeper understanding of the perceptions and experiences of teachers and learners.

5.2.2 Summary of the findings

Teachers Perceptions towards competence based curriculum

Teachers and learners have a range of views towards the competency-based curriculum in mathematics, including support and concerns about learner-centeredness, assessment, and authentic learning. Indeed, the findings indicated that teachers and learners hold a range of views towards the competency-based curriculum in mathematics, highlighting the complexity of this issue and the importance of engaging stakeholders in ongoing dialogue about the curriculum. The findings suggest that teachers and learners have different perspectives on learner-centeredness, highlighting the need for ongoing dialogue and support to bridge this gap. The implementation of a competency-based curriculum requires teachers to shift their focus from a teacher-centered approach to a learner-centered approach. This involves providing learners with more autonomy, allowing them to direct their own learning and taking responsibility for their progress. While this approach has the potential to enhance learner engagement and motivation, it can also be challenging for teachers who are used to more traditional teaching methods.

Challenges faced by teachers in implementing competency-based curriculum

 Teachers experience a range of challenges in implementing the curriculum, with resistance to change, time constraints, and lack of resources being some of the most common issues reported. The findings indicated that teachers face a range of challenges in implementing the competency-based curriculum in mathematics, which can hinder their ability to provide high-quality learning experiences for their learners. One of the most common challenges reported by teachers was resistance to change. Many teachers expressed concern about the shift away from traditional teaching methods and the difficulty of adjusting to the new curriculum. This resistance to change

can be a significant barrier to implementation, as it can lead to a lack of engagement or commitment among teachers.

Ways that can be used to uphold the competence based curriculum in teaching mathematics.

Professional development, collaboration, and access to resources are among the strategies that can support the effective implementation of the curriculum. Indeed, professional development, collaboration, and access to resources are all important strategies that can support the effective implementation of the competency-based curriculum in mathematics. Professional development can help teachers to develop the knowledge and skills they need to implement the new curriculum effectively. This can include training in instructional strategies, assessment techniques, and curriculum design. Collaboration can also be beneficial, as it allows teachers to share best practices, resources, and support with one another. Finally, access to resources, such as technology, textbooks, and instructional support, can provide teachers with the necessary tools to implement the curriculum effectively.

5.3. Conclusion

In conclusion, the findings of this study highlighted the complexity of implementing the competency-based curriculum in mathematics, as well as the challenges and opportunities that arise in this process. Effective implementation requires the engagement and support of teachers, learners, and other stakeholders. By addressing the challenges identified in this study, such as resistance to change and lack of resources, and by implementing strategies such as professional development and collaboration, educators can more effectively support learning and achievement.

5.4 Recommendations

Based on the findings of this study, the following recommendations are offered for

Teachers:

1. Receive regular training and support on implementing the competence-based curriculum in mathematics.

2. Use a variety of teaching methods, including technology and multimedia resources, to engage learners and promote practical skills.

3. Encourage collaboration and peer-to-peer learning among learners to foster a supportive learning environment.

Learners:

1. Take ownership of their learning, actively participating in mathematics classes and seeking help when needed.

2. Practice problem-solving skills and apply mathematical concepts to real-life situations.

3. Engage in self-assessment and reflection, setting goals and identifying areas for improvement.

Curriculum Developers:

1. Review and update the mathematics curriculum regularly to ensure it remains relevant and effective.

2. Incorporate feedback from teachers, learners, and stakeholders to improve the curriculum.

3. Ensure the curriculum aligns with national and international standards for mathematics education.

Future Researchers:

1. Investigate the long-term impact of the competence-based curriculum on learners' mathematics achievement and career choices.

2. Explore the effectiveness of different teaching methods and resources in implementing the competence-based curriculum.

3. Conduct comparative studies with other countries or regions to identify best practices in mathematics education.

REFERENCES

Bert, V.(2020).*Transforming the future:* Rethinking teaching, learning, and assessment in the era of the New York State Next Generation Learning Standards. Education Next.

Berlin, S.(2020).*New York State's quest for equity:* The shift to the Next Generation Learning Standards. Journal of Educational Equity.

Cerit, H.(2018).*New York State's competency-based education diploma policy.* Educational Forum.

Cert, V.(2019).*The case for competency-based education:* A policy perspective from New York. Phi Delta Kappan.

Diat, B.(2022) .*New York's challenging journey towards a new vision for education.* Harvard Educational Review.

Erk, B.(2020).*New York's assessment of student learning:* A model for measuring competency-based education. Journal of Competency-Based Education.

Erkm, B.(2020).*The changing landscape of higher education:* A look at New York's higher education competency-based initiative. Community College Journal of Research and Practice.

Fert,G.(2020).*A look at New York's competency-based education model.* London: Longman.

Gert, V.(2020).*Understanding the new York State education department's competency-based diploma policy.* New Directions for Student Services.

Hord, S. M. (2019). *CBAM*: A framework for improving educational practice. Educational Researcher, 38(6), 517-523.

Hork, B.(2020).*The future of the higher education curriculum in Africa:* A case for competency-based education. African Journal of Research in Mathematics, Science and Technology Education.

Harbin,T . (2020).*The challenges and opportunities of implementing competency-based education curriculum in Kenyan universities.* Journal of Curriculum Studies.

Hilart, K.(2018).*Competency-based curriculum: im*plications for higher education training and research in Kenya. International Journal of Research and Innovation.

Jung, S. & Xu, Z. (2018). *The role of CBAM stages in the professional development of teachers implementing the Next Generation Science Standards.* International Journal of Science Education, 40(18), 2313-2335.

Jolos, C. (2018).*The adoption of competency-based curriculum in African universities:* A comparative review. Teaching in Higher Education.

Farrell, J. (2017). *Using CBAM as a framework for navigating change.* London: Longman.

Lerk,, P.(2018).*Tackling equity in a competency-based education degree program.* Innovative Higher Education.

Lort, J.(2020).*What do we know about equity in competency-based education?* Innovative Higher Education.

Lorbin,B.(2020).*Competency-based education and equity*. Future of Children.

Mort, P.H.(2018).*An equity lens for design and implementation of competency-based education*. Innovative Higher Education.

Munongeri, H.(2018).*The impact of competency-based education on students, faculty, institutions, and accreditors.* Innovative Higher Education.

Mark, C.(2019).. *A journey to personalize learning*. Phi Delta Kappan.

Mujoz , P.(2020).*Redesigning our higher education system for the 21st century*: The potential of competency-based education. Future of Children.

Orchars, V.(2022).*A transformational change*. The Chronicle of Higher Education

Orik, B.(2019).*Teaching for deep learning:* Using competency-based education to support a learning revolution. Peer Review

Orib, T.(2019).A *national scan of K-12 competency-based education*. New York : Delwin.

Rarb,S. (2019) .*Competency-based education:* New concepts, new outcomes, new methods. Innovative Higher Education.

Riam, T.(2020) .*New frameworks, new methods, and new evidence to support competency-based education*. Educational Researcher, 48(6), 387-395.

Sirt, B.H.(2020).*Competency-based education for higher education*. Change, 49(3), 50-56.

Sirack,T.S. (2018).*Competency-based education (CBE)*: A critical review of the evidence base. Review of Educational Research, 89(2), 350-379.

Yert, B.S.(2020).*Defining a vision for Competency-based education*. Future of Children, 30. London: Longman.

Ball ,V.and Cohen,H. (2019) .*Tinkering toward utopia:* A century of public school reform. Cambridge, MA: Harvard University Press.

Clark,B.S. and Murphy,T. (2017) .*Designing and implementing student-centered assessments*: Authentic alternatives to standardized testing. New York, NY: Teachers College Press.

Easley ,L.P.(2018).*From science of learning to school science: T*he promise of educational design. In M. McKeough, L. Brittin, & D. Hammerness (Eds.), Beyond standards: Assessing opportunities for deep and meaningful learning (pp. 231-252). Mahwah, NJ: Lawrence Erlbaum Associates.

Hiebert , S.(2017).*Authentic assessment in action:* Studies of schools and students at work. Portland, OR: Northwest Regional Educational Laboratory.

Hammond,L.(2020).*From science of learning to school science:* The promise of educational design. In M. McKeough, L. Brittin, & D. Hammerness (Eds.), Beyond standards: Assessing opportunities for deep and meaningful learning.

Hammond, L.(2018).*Reform by the book: What is 'textbook' in mathematics textbook adoption*? Educational Evaluation and Policy Analysis.

Hattie,J.(2019).*Tinkering toward utopia*: A century of public school reform. Cambridge, MA: Harvard University Press.

Johnson, B.(2021).*Learning in school and out*. Educational Researcher

Lei,F.(2019).*Authentic assessment in action:* Studies of schools and students at work. Portland, OR: Northwest Regional Educational Laboratory.

Resnik, K.(2019).*Teacher collaboration: I*mpact on student achievement and teacher effectiveness. Journal of Staff Development.

Tyack ,S.and Cuban ,T.(2015) .*Professional development and teacher learning: Opportunities to learn.* Educational Researcher.

Appendix .1

P Bag 1020
BINDURA
ZIMBABWE

Tel: 0271 - 7531 ext 1038
Fax: 263 - 71 - 7616

BINDURA UNIVERSITY OF SCIENCE EDUCATION

Date: 28 / 03 / 2024

TO WHOM IT MAY CONCERN

NAME: NDANETA CONSTANCE TRACY   REGISTRATION NUMBER: B224830B

PROGRAMME: HBSc Ed Mathematics   PART: 2.1

This memo serves to confirm that the above is a bona fide student at Bindura University of Science Education in the Faculty of Science Education.

The student has to undertake research and thereafter present a Research Project in partial fulfillment of the HBSc Ed Mt programme. The research topic is:

TEACHERS' PERCEPTIONS ON THE IMPLEMENTATION OF THE COMPETENCE-BASED CURRICULUM TO THE TEACHING AND LEARNING OF MATHEMATICS AT ORDINARY LEVEL IN MARONDERA DISTRICT

In this regard, the department kindly requests your permission to allow the student to carry out his/her research in your institutions.

Your co-operation and assistance is greatly appreciated.

Thank you

BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF EDUCATIONAL FOUNDATIONS

9 APR 2024

P. BAG 1020
BINDURA

Z/Ndemo (Dr.)
CHAIRPERSON - SAMED

THE HEAD
IGAVA SECONDARY SCHOOL
P. O. BOX 853 MARONDERA
DATE: 28/03/24   SIG:
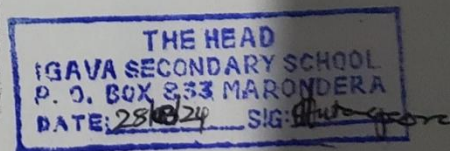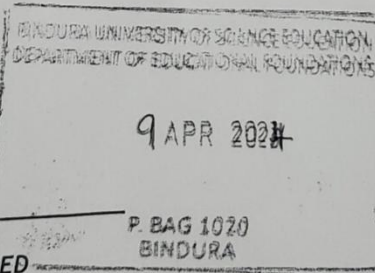
Appendix .2
Interview guide for teachers

1. In your experience, how does the competence based curriculum differ from previous curricula?

2. What challenges have you faced in implementing the competence based curriculum?

3. How have you changed your teaching methods to accommodate the new curriculum?

4. What factors have influenced your willingness to adopt the competence based curriculum?

5. What impact has the competence based curriculum had on student learning outcomes, particularly in mathematics?

6. Has the competence based curriculum had an impact on your assessment methods? If so, how?

7. What has been the reaction of parents and other stakeholders to the new curriculum?

8. What professional development have you received to help you with the implementation of the competence based curriculum?

9. Do you feel like you have the resources you need to successfully implement the new curriculum?

10. How has the competence based curriculum impacted your relationship with your students?

Thank you

Appendix .3

Questionnaire for learners
Section A

Fill up the following gaps

1. Name.............................

2. Surname............................

3. Age..............................

4. Gender..........................

5. Form..............................

Section B

Tick where applicable

1. Do you feel like the competence based curriculum has helped you to understand concepts better?

Yes

No

2. Do you feel like the competence based curriculum has made learning more enjoyable?

Yes

No

3. Do you feel like you have more freedom to choose what you learn under the competence based curriculum?

Yes

No

4. Do you feel like the competence based curriculum has increased your motivation to learn?

Yes

No

5. Do you feel like the competence based curriculum has increased your understanding of how to apply concepts to real-world situations?

Yes

No

Section C.

1. How do you think the competence based curriculum has impacted your ability to learn independently?

....

....

....

....

....

....

....

2. Can you explain the difference between learning under a traditional curriculum and a competence based curriculum?

....

....

....

....

....

....

....

....

....

3. In what ways do you think the competence based curriculum has helped you to develop better study habits?

....

....

....

....

.

....

....

4. Has the competence based curriculum had an impact on your long-term memory for what you've learnt? If so, how?

....

....

....

....

....

....

....

....

5. How has the competence based curriculum impacted your ability to apply what you've learnt in real-world situations?

....

....

.

....

....

....

....

....

....

6. Has the competence based curriculum motivated you to learn? If so, how?

....

....

....

....

....

....

.

....

....

....

7. Has the competence based curriculum had an impact on your ability to think creatively? If so,

how?

....

....

....

....

....

....

8. Has the competence based curriculum impacted your ability to think critically? If so, how?

....

....

....

....

....

....

....

....

....

9. Has the competence based curriculum had an impact on your ability to work with others? If so, how?

....

....

....

....

....

....

....

....

10. Has the competence based curriculum had an impact on your ability to communicate effectively? If so, how?

....

....

....

....

....

....

....

....

....

....

....

Thank you