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Enhancing Student Learning through Student-led Roadmaps

Student and Teacher Experiences from the Bhutan Baccalaureate Schools

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Abstract

This study explores how students and teachers experience the use of Roadmaps[1] within the Bhutan Baccalaureate[2] (BB). The main focus is on the role of Roadmaps in the students' learning process. Using semi-structured interviews with 8 students and 5 teachers across three BB schools, the impacts and the challenges related to Roadmaps are determined. The findings indicate that the use of Roadmaps is useful to students in goal setting, organization, and ownership of their own development. According to the students, the Roadmaps serve the function of tracking goals and helping develop the student's skill, while teachers mostly look at how the Roadmap helps develop the reflective skills of the students. From the above findings, it can be seen that the mentor plays a key role in helping students understand Roadmaps. Some of the challenges, such as, difficulties in defining goals, understanding components of a Roadmap, limited access to devices, and the assessment systems that mostly value scores in standardized tests impact the how students value and use Roadmaps. The study shows that Roadmaps can strengthen the role of student in their learning when supported by effective mentoring, clear guidance, and clearer policy support.

Key words: Roadmaps, Student-led planning, student ownership, self-regulated learning, mentoring, education reform, Bhutan Baccalaureate

[1] Roadmaps are individual plans developed by the students supported by the teachers- each student creates their own Roadmap to highlight what they want to learn and determine a plan and timeline.

[2] The Bhutan Baccalaureate (BB) is an education system developed by Druk Gyalpo's Institute (Bhutan) that attempts to bring focuses of education to the development of 5 Areas (Cerebral, Social, Emotional, Physical and Spiritual). The BB is currently implemented in 24 schools in Bhutan.

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1. Introduction

We understand learning as a process that is not only led by the individual student but also influenced by the social, cultural, and environmental factors. Students tend to learn better when they are involved actively in the learning process instead of depending completely upon their teachers (Vygotsky, 1978; Bruner, 1997). The capability of the students to set goals, monitor their growth, and think about what they are learning brings positive changes in the area of awareness, motivation, and performance (Winne & Hadwin, 1998; Zimmerman, 2002). In doing so, they understand what they are good at and areas they need to improve on, allowing them to figure out what they need to do further.

Education systems have taken efforts to promote the role played by students in their learning processes. Instead of treating students as recipients of information, schools are working towards making them feel responsible and able to decide on what and how they want to learn (Nicol & Macfarlane-Dick, 2006; Hattie & Timperley, 2007). This process is mainly facilitated through the support provided by teachers, peers, and family members who encourage and intervene in their learning process. Schools are trying to create environments where students can actively participate in their learning, engage in reflective practices, and develop self-regulation skills which will enable them to take control of their own learning processes. Through this process, their engagement, motivation, and interest towards learning is seen to be increasing (Cleary & Kitsantas, 2017). Therefore, student involvement in the planning and monitoring of their learning processes is considered an integral part in the development of self-directed learners.

Despite strong support for allowing students take a lead in their learning, most education systems still rely on teacher-led instruction and standardized testing. This does not allow students to decide what or how they want to learn (Nicol & Macfarlane-Dick, 2006). Even in

systems that encourage students to take part in learning, decisions are mostly made by the teachers and schools with minimal involvement of students (Sengodan & Iksan, 2012; Shemshack & Spector, 2020). In reality, examples of processes that enable personalized learning and allow students to lead their own learning are not very common. As a result, researchers have started to look into collaborative learning practices in which students play an active role. Most of these practices try and combine student ownership with structured support from teachers, parents, and peers. This is guided by a belief that while students should lead their own learning, guidance and support from the teachers and parents are still important.

An example of an initiative that takes such an approach to learning is the Roadmap within the BB. The BB is an educational system aimed at supporting the holistic development of students in the Five Areas of Development (Cerebral, Emotional, Physical, Social and Spiritual). The goal for students going through the BB is to develop qualities of a constructive and contributory citizen (Druk Gyalpo's Institute, 2018, 2022, 2024). The Roadmap within the BB is described as a flexible plan created by the students with support from the teachers. Roadmaps usually contains information about students' aspirations, strengths and weaknesses, plans, timelines, and indicators of success (Druk Gyalpo's Institute, 2022). Although students play the main role in creating their Roadmaps, the process requires teachers to provide feedback, mentoring and guidance. Roadmaps can be considered a type of student-led planning where students describe their goals and plans while also getting inputs from the teachers and parents. As per the documents on the BB, the Roadmap is seen a tool that help students develop self-awareness, responsibility, and goal-setting skills among students (Druk Gyalpo's Institute, 2024). Now implemented in 24 schools across Bhutan, the Roadmap may be viewed as an effort to promote self-responsibility and self-regulation of learning in students.

The concept of personalized learning and student-led planning have been studied widely in the western context. However, there is very less research on how these processes work in developing countries or in distinct cultures like Bhutan. Moreover, experiences from South Asia in regard to student-centred and self-regulated learning is also very limited. There are only a few studies examining how these methods have been tried out within some schools. In most South Asian countries, education is still influenced by a culture of standardized exams with a strong focus on teacher-led approach to instruction. As a result, the curricula also focus more on covering academic content than on creating space for students to get involved in their own learning. Not much is known about how student-led planning interact with these wider factors within the South Asian education systems.

Even in Bhutan, although the BB is implemented in 24 schools, the impact of Roadmaps on enhancing student learning has not been studied so far. Existing documents related to the BB focus on policies and design of the BB rather than experiences of students and teachers. There are some documents that provide a general understanding of the experience of BB in the implementing schools. While these documents highlight that Roadmaps play a role in enhancing student ownership and personalized support, there is very little documentation on the experiences of students and teachers on their experiences with the Roadmap. It is not very clear how students perceive the influence of Roadmaps on their learning processes, how teachers and parents support students during the process, and what challenges students encounter when designing and implementing their Roadmaps.

This study investigates the contribution of Roadmaps to student learning within BB schools. It examines the influence of Roadmaps on students' learning and how students see the impact of Roadmaps in giving them the ownership. Additionally, the roles of teachers, parents, and peers

in supporting students during the process of creating Roadmaps are also understood to determine how these forms of support influence students' experiences. The study also identifies challenges faced by students in designing and implementing their Roadmaps and gathers suggestions from both students and teachers on how these challenges could be addressed. To achieve these objectives, semi-structured interviews were conducted with eight senior students (Grades 11 and 12) and five teachers, across three BB schools, each with a minimum of three years of experience creating Roadmaps.

The next section delves into the existing literature that explores the theory and practices of how student-led planning impacts their learning. In doing so, we explore the positive and negative experiences of the students and how teachers and parents perceive the impact of students-led planning. This is followed by an overview of the Bhutanese education system and how the role of students has shifted in the narratives on education reform in Bhutan. Drawing upon the BB documents, an understanding on what the purpose of Roadmaps are and why BB considers Roadmaps important is provided. Having established this context, the remaining sections discuss the design and processes of data collection and analysis of the current study, followed by the results and discussions that delve into the key themes emerging from the data as well as their implications.

2. Literature Review

Student-led planning has been discussed in many ways in the literature. Scholars who support this argue that giving students the chance to decide what they are learning leads to better ownership and self-regulation of learning (Zimmerman, 2002). Over time, there has been a shift from teacher-led instruction towards allowing students to take responsibility for designing, monitoring, and reflecting on their own learning in the education systems. Student-led planning is described as a process that allows the student to set goals, determine strategies and reflect on learning (Pintrich, 2000; Zimmerman, 2002; Nicol & Macfarlane-Dick, 2006). As a result, the motivation to learn is seen to improve among students who are actively involved in the planning process.

Experiential and Constructivist learning provided the basis of student-led planning. According to Dewey (1938), learning happens when learners intentionally go through experiences with clear objectives that enable them to learn how they accomplish the tasks assigned to them. The experiential learning cycle by Kolb (1984) shows learning as a process where learners have a concrete experience, they observe the experience and conceptualize the learning. Planning plays an integral role here as it enables the learners plan their activities and ensure that their reflection translates to actions. Self-Regulated Learning (SRL) emphasized on the importance of planning as a key component of student led learning. Zimmerman (2002) defines SRL as a three-part concept that includes forethought, performance and self-reflection where planning takes a central role in forethought. Planning involves setting goals, strategy selection and preparation for the task. It also involves monitoring to ensure that the student is learning, and the experience is translated into action. Planning by students in self-regulated learning involves goal setting, strategy use, progress tracking and adjustment to the goals (Pintrich, 2000; Greene & Azevedo,

2007). However, it is important to note that students do not always have all the skills required to self-regulate learning and effective planning requires guidance from the teachers.

Berger et al. (2014) describe tools such as learning targets, project roadmaps, and student-led conversations, which provide opportunities for students to set goals, track progress, reflect on their learnings and share their achievements. Teacher support, in the form of providing examples and feedback helps move responsibility from teachers to students over time (Higgs, 2012). Tang et al. (2024) argue that structured support is necessary for the students in order to determine realistic timelines, identify resources, and go through tasks with support from teachers before the students can take ownership.

Technology has enabled as well as complicated the process of student-led planning. Personal learning platforms and digital system provide support in goal setting, access to resources, record keeping and reflection (Dabbagh & Kitsantas, 2012). For example, students now use a platform to create schedules, upload their work as they progress, receive instant feedback and reminders about tasks. Aviran & Blonder (2023) find that adaptive platforms that use the data on the student to provide specific suggestions, are useful in providing personalized support. In addition, these platforms also provide analytics on learning as the student engages with the platform, and getting students to reflect, which help them refine their plans. In this way, technology changes planning from a static routine into a dynamic process where the student gets inputs and suggestions at different stages of the process. At the same time, these tools also allow teachers to monitor progress of many students at a time, determine how much time has been spent on a task, identify patterns, and offer targeted support without reducing the ability of the student to take ownership.

2.1 Differentiating Learning

Student-led planning is usually seen as a good way of differentiating learning based on the abilities of the students. This helps the students to be motivated as the plans challenge them without comparing them with other students. Bernacki & Walkington (2018) note that when students are able to align their goals and tasks with their own interests, they are more interested to engage with the task. Planning also allow students to engage with tasks at appropriate levels of difficulty and develop confidence in their capabilities (Salar & Turgut, 2021). Even though the information could be exactly the same for all students, the procedure could be completely different.

According to Pui (2016), students will feel more responsible, motivated and will acquire skills that will make them feel like they are capable of completing the tasks. In other words, the fact of being able to participate in the planning process makes students more self-confident and interested in studying and achieving higher results. In comparison with students working with standard tasks prescribed by teachers, those setting personal goals and reflecting upon their work show much better results (Dalland & Klette, 2016; Jones, 2019; Tang et al., 2024). This happens because student-led planning enables them to manage their own tasks rather than simply completing tasks that are pre-determined by the teachers. In doing so, students understand why they are doing something as well as how to do it. For example, Dalland and Klette (2016) observed that the application of Individualized Educational Programs (IEPs) in classroom environments facilitated planning by students for their activities, tracking of their progress, and alteration of their methods. This helped them self-regulate their own learning. Beyond IEPs, when students were given the opportunity to generate their own activities, such as quizzes, they were seen to engage more with the content and reflect critically on their understanding (Konrad, 2008; Jones, 2019). Tang et al. (2024) also highlight that opportunities

for students to design and pursue projects in STEM enhances their ability to carry out the projects and engagement, leading to better understanding and improved academic performance.

2.2 Impacts of Student-Led Planning

Since students are the ones who are supposed to benefit from student-led planning, their experiences determine how they engage with the process and how they see its impact. In areas from STEM to student-led IEPs, studies show that students notice that planning supports them in learning the content knowledge as well as their ability to reflect on learning (Royer, 2017; Oller et al., 2021, Tang et al., 2024). Some of the most common themes emerging from the students' experiences when they are involved in the planning process are discussed in the following sections.

2.2.1 Ownership and Engagement

Student-led planning seems to directly influence ownership, motivation, and engagement in learning. Tang et al. (2024) report that students who were given the chance to select their own STEM projects reported better engagement in tasks. This is because the projects aligned with their interests and students were also able to see how they were going to complete the projects as they went through the planning process. Students shared that their interests encouraged them to spend more time and effort in exploring ideas beyond what was required. When students were given opportunities to set personal goals for projects or assignments, their interest in the task grew. This led them to put more effort and engage with the subject (Bernacki & Walkington, 2018).

Beyond projects and IEPs, involvement of students in planning also improves learning of academic content. For example, students that were involved in the curriculum design and given a role in determining what to learn or create assessment tasks such as quizzes, reported that they

felt a sense of ownership and responsibility for their learning. This led to increased participation and motivation in the lessons (Cullen et al., 2012; Jones, 2019; Magas, 2022; Marstaller and Amoakoh, 2023). Oller, Engel, and Rochera (2021) also found that personalized tasks become more relatable to students when the activities were able to connect to students' interests and prior experiences.

2.2.2 Learning Beyond Academic Content

The use of student-led planning also enables them to develop competencies beyond the acquisition of subject knowledge. As they go through the planning process, they develop abilities such as reflection, self-monitoring, and responsibility. Research on SRL highlights that planning, monitoring, and reflection are important processes through which students develop awareness of how they deal with and manage tasks (Zimmerman, 2002; Nicol & Macfarlane-Dick, 2006). These processes support students in understanding not only what they are learning but also how they learn. Dalland and Klette (2016), through the use of IWPs, found that structured planning is useful for students as it supports them in organizing tasks and keeping record of their progress over time. However, they also noticed that all students do not go through the same process when they are given the chance to lead their planning. Some students engaged actively in planning, reflection and the task at hand. Others saw work plans more as requirements that they need to complete. This shows that planning tools can create opportunities for reflection and planning, but their impact depends on how students interpret and use them.

As reported by Jones (2019), using student-created tests prompted students to reflect on their comprehension of the topic. According to the students, they had to first comprehend the topic before being able to make questions for their peers. As they designed questions for others, students were required to think about key concepts and identify any areas that they did not understand. However, the effectiveness of this activity depended on students' ability to identify

gaps in their own understanding. In most cases, learning tasks that extended beyond delivery of content by teacher alone have been found to encourage student engagement. Tang et al. (2024) noted that students' effort increased and that they became better at problem solving when they chose their projects and designed ways to complete them. The projects enabled students to examine the topic from any angle that they wished to. Nevertheless, the degree of involvement was affected by whether the task was relevant to the learning outcomes expected by the teacher. In cases where these students believed that such assignments also helped in evaluations from their teachers, it was noted that they became more focused on the process. According to Royer (2017), in instances where the students had a role in goal setting, they gained an understanding of their strengths and weaknesses, which helped them know what they needed to improve upon.

2.3 Ownership of Learning

Students' sense of ownership does not come immediately when autonomy and involvement in planning is introduced. Instead, it develops slowly as the students experiment with the task and interact with the teachers and parents. Studies warn that students usually experience their involvement in planning as challenging, particularly when they are used to teacher-led instructions. Dalland and Klette (2016) observed that when IWPs were introduced, students were confused between freedom to choose and responsibility, with some students struggling to understand how to move forward. Likewise, students involved in self-selected projects were also initially unsure about how to start the process before slowly developing confidence as they went through the process (Tang et al., 2024). Marstaller and Amoakoh (2023) suggests that ownership is not simply developed by providing choice but is developed through participation in planning and decision-making processes that allow students to see the consequences of their choices over time.

Personalization is seen to be useful when students are able to connect what they are learning across different contexts. Ownership develops over time and students require time to understand why they need to be involved in the planning process and how to contribute to the process (Oller et al., 2021). In that sense, there is a need to move away from the usual assumption that giving students the choice leads to better engagement. Instead, ownership of learning needs to be seen as a gradual process that is supported by opportunities for reflection, feedback, and revision.

2.3.1 Conditions that Influence Ownership

While giving students the ownership is often seen to improve motivation and engagement, studies show that autonomy without appropriate support leads to confusion. Nicol and Macfarlane-Dick (2006) argue that effective SRL require structured feedback that help students identify goals, determine which is the most realistic goal to work on and evaluate their progress. In the initial phase, students require teachers or parents to validate the quality of their plans and help them reflect on the process. Without such feedback, students struggle to interpret how good their goals are and what needs to be done to improve them. Real-time support systems are also useful in allowing students to adjust their plans during the tasks. In that sense, planning becomes more effective when students receive prompts for reflection and feedback on their work that help them evaluate their progress (Munshi et al., 2023; Lim et al., 2024).

Van der Graaf et al. (2023) caution, that the design of such support systems take into account the needs of the students. In some cases, poorly designed supports might reduce the ability to students to take ownership or fail to provide useful guidance. This is particularly important for teachers as they need to understand an individual student quite well in order to provide personalized support. Oller et al. (2021) note that personalization becomes useful when teachers are able to connect with the students' plan, help the student determine how best to approach the task and provide opportunities for reflection. In this sense, while the students might be given

the choice of planning and determining their own ways of learning, the impact of the process on their learning is determined by the relationship between their own plans and learning experiences that are mediated by teachers.

2.3.2 Student Readiness and SRL Skills

The impact of student-led planning varies depending on the student's prior experience and ability to self-regulate. Not all students possess equal capacities for self-regulation. Moreover, they are different in their abilities to define goals, develop adequate strategies, self-monitor, and maintain motivation (Pintrich, 2000; Puustinen & Pulkkinen, 2001; Pintrich & Zusho, 2002). This is why some students manage to make use of opportunities to plan better and to check their success better than others. According to Zimmerman, self-regulation arises in the course of time under guidance. This means that students need to go through a process learning how to self-regulate before they can do it themselves. In this sense, autonomy may work well for students who already come with the skills of planning and monitoring.

Experiences from classrooms show that students with better skills to organize and reflect on the learning used work plans more effectively, while others required guidance (Dalland & Klette, 2016). Jones (2019) and English and Kitsantas (2013) notes that student-generated quizzes enhanced reflection when students were able to evaluate their own understanding accurately. In most cases, personalized support and targeted feedback are found to be useful in supporting students who lack SRL skills as the process helps them understand the planning and monitoring processes (Munshi et al., 2023; Lim et al., 2024). The success and impact of student led planning depends on how well teacher instruction takes into consideration the differences in student readiness. This is then supported by how well the teacher provides differentiated supports that help students gradually develop the ability to manage their own learning.

2.4 The Role of Parents and Teachers

The impact on students' experiences of student-led planning is largely determined by the relationship between them and teachers and parents. During communication, students learn about such concepts as autonomy, responsibility, and engagement in action. Even though student-led planning implies individual activities related to goals and self-regulation, students recognize that planning is an activity performed collaboratively in conjunction with their teachers, parents, and peer group. This aspect becomes evident because the influence of each factor is felt in understanding expectations, making judgments, and sustaining motivation. According to the principles of SRL, skills associated with the process of learning self-regulation occur as a result of communication with one's community and cannot develop independently from interaction (Zimmerman, 2002; Pintrich & Zusho, 2002). Therefore, the community surrounding a particular student becomes the supportive mechanism for taking responsibility.

At the same time, the influence of adults on the process of students' planning poses certain difficulties for them (Dalland & Klette, 2016; Royer, 2017). On the one hand, it appears that support and assistance provided by teachers and parents help increase students' self-confidence and help them cope with complicated assignments (Boekaerts & Corno, 2005). However, too much assistance often has a negative effect on students' sense of ownership, especially when goals, plans, and deadlines are determined by adults rather than generated by students themselves (Reeve et al., 2004). Thus, for students, the presence of adults does not mean their control over everything but rather means having access to assistance when needed.

2.4.1 Teachers as Facilitators of Learning

Students identify teachers as people who guide them in determining the effectiveness of planning. Two of the most common ways through which this guidance occurs is role modelling

and targeted feedback. The quality of teacher's interaction with the student determines whether planning becomes a meaningful learning activity or just an administrative task. Dalland and Klette (2016) found that IWPs help students structure their tasks and monitor progress. However, some students used work plans to plan and reflect on their learning, while others saw them as documentation required by teachers. This variation in experiences show that creating space for planning alone do not lead to meaningful engagement. The effectiveness depends on how teachers integrate them into the design of their lessons. Students tend to rely on teachers to show them how complex tasks can be broken down into smaller steps. In this context, students rely on teachers to show them strategies for goal setting, time management, and problem solving (Marstaller and Amoakoh, 2023; Tang et al., 2024).

Within the context of SRL, planning and monitoring are connected processes that develop gradually through as the students go through the process (Puustinen & Pulkkinen, 2001; Zimmerman, 2002). Students appreciate teachers who balance autonomy with structured support. Teachers who provide guidance that enables students to develop planning strategies without taking away responsibility from them and (Reeve et al, 2004). Such teachers are not only able to model the process for the students but also knows when the student needs to be left on their own so that they are able to develop the skills on their own. Boekaerts and Niemivirta (2000) argue that the goal setting process should also ensure that there are mechanisms in place to avoid failure, embarrassment, or loss of self-worth for the student. How a student reacts to a situation determines whether the students would take the process forward or develop resistance to goal setting.

2.4.2 The Role of Feedback

Students also emphasize that the feedback they receive from teachers and peers are useful in understanding how well they are planning and how their plans are updated. Feedback is the

process through which students compare where they are currently with where they see themselves going, identify gaps, and adjust their plan accordingly (Nicol & Macfarlane-Dick, 2006). However, the usefulness of feedback depends heavily on how clear it is and when feedback is provided. Students find that feedback that gives them concrete suggestions for next steps are more useful for them rather than general comments that does not provide useful steps (Oller et al., 2021). Specific feedback enables students to revise their plans and adjust strategies in response to the changing situations, challenges or expectations of their peers or teachers. In some cases, breaking down the planning process into sub-goals or giving prompts for the students to reflect on effectiveness of their plans are found to help students understand the planning process (Munshi et al., 2023; Dever et al., 2024).

In contrast, students report frustration and lack of clarity when feedback is delayed, not clear, or disconnected from their tasks or plans (Oller et al., 2021; Lim et al., 2024). Feedback functions not only as assessment but also become a way of showing whether teachers are attentive to students' efforts and goals. As a result, the impact of feedback on planning is determined by how a student sees its usefulness in helping them become better at the planning process.

2.4.3 Parents as Motivators

Students also recognize parents as people who support their planning, particularly outside the classroom where they are required to organize time, maintain motivation, and manage priorities. Parents support planning as they encourage reflection, monitor progress, and help students sustain effort over extended periods of time. Gonzalez-DeHass (2019) argues that involvement of parents is most effective when they are seen as supporters of motivation rather than directly controlling the process. Parents that engaged in discussions about strategies and progress related to a student's IEP helped students build confidence and responsibility (Royer, 2017). When parents collaborated the students in the process instead of determining goals for them, students

found the process to be much effective. Students described these involvements as a source of encouragement in the planning process. Willems and Gonzalez-DeHass (2024) note that parents who provide supportive guidance help students become more resilient, develop a growth mindset, and motivation to pursue their goals.

However, involvement of parents can become challenging for the students to navigate when expectations about self-led planning differ between home and school. There is a need for teachers and families to agree on how support should be provided in order to provide consistent guidance to the student. Otherwise, students find it challenging when they notice that what is expected of in regard to their own planning between school and home (Nagle, 2020). Marstaller and Amoakoh (2023) also note that classroom environments allowing students and their to contribute to decisions about what they want to learn creates a stronger sense of ownership.

2.4.4 Technology and AI

The use of technologies and AI to support planning and reflection is becoming more popular. Digital Platforms are used to provide reminders, track progress, and add prompts for reflection. This helps them organize their tasks and maintain focus as they get constant reminders about the task. Adaptive learning environments strengthen SRL skills as they allow students to set sub-goals and evaluate their strategies (Munshi et al., 2023). Lim et al. (2024) demonstrate that personalized support can guide monitoring processes and help them make more informed decisions about their plans during tasks as the platforms provide them analytics based on how they are engaging with the task. In addition, the ability to access resources using technology ensures that students do not always have to depend on adults or peers to give them resources.

However, students often highlight that automated feedback is less meaningful than feedback provided by teachers, particularly when it lacks contextual understanding of their goals or challenges. Marstaller and Amoakoh (2023) note that digital tools are most effective when they

are integrated with teacher feedback. From the student perspective, the effectiveness of technological tools depends on their relevance to the goals. Students find tools that simplify tasks or provide clear visual representations of progress useful as they support them in the planning process.

2.5 Challenges in Implementing Student-Led Planning

Despite the value of student-led planning, there are still many challenges in implementing it effectively. These challenges occur across the areas of systemic, organizational and learning design that are often influenced by institutional structures, teacher capacity, student readiness, and curricular and assessment structures. The following section delves into some of the challenges highlighted by the existing literature regarding the effective implementation of student-led planning.

2.5.1 Institutional and Systemic Challenges

The systems and policies that education systems put into place can either support or constrain the implementation of student-led plans. Mikroyannidis et al. (2014) and Basham et al. (2016) highlight that most education systems are constantly under the pressure to follow fixed curricula, cover mandated content, and meet standardized testing requirements. This usually leaves very little space for implementation individualized planning within the school's timetable. Teachers recognize the value of student-led projects but are forced to complete core content in a given period of time as they have to prepare students for examinations (Tang et al., 2024). Beyond these generic systemic issues, cultural values also impact the implementation of student-led planning. In some places, cultural norms that focus much more on teacher authority does not allow students to take an active role in the process (Marstaller & Amoakoh, 2023). This is particularly relevant to cultures similar to Bhutan where respect for teachers is often prioritized and students suggesting or coming up with plans are often seen as disrespect.

2.5.2 Teacher Capacity and Workload

The other challenge is related to teacher capacity and workload. Helping students go through the planning process requires more than content knowledge for the teachers. Understanding of how to support SRL, giving feedback, and guiding reflection are also necessary for teachers to enable students to lead their own learning (Darling-Hammond et al., 2020). Mikroyannidis et al. (2014) report that most teachers feel unprepared to shift from direct instruction to facilitation, especially when they manage large classes or have limited planning time. In addition, workload pressures often lead teachers to shift to traditional teacher-led instruction rather than putting time and effort required for student-led planning. Teacher professional learning, time allocation, and ongoing support structures are necessary for successful implementation and cannot be assumed to exist naturally within the existing systems (Pui, 2016; Marstaller & Amoakoh, 2023).

2.5.3 Role of Assessment

In most education systems, assessment practices do not take into account the role of student-led planning or personalized learning. When emphasis remains on standardizing the outcome of assessment than the whole process of planning, students no longer think of the significance of planning in general. According to Nicol and Macfarlane-Dick (2006), formative assessment needs to be geared towards enhancing SRL through goal setting, monitoring, and strategy development. These reflections and evidence of growth captured in a student's plan should inform the reports that are written on the student. However, summative assessment mostly looks at the ability of students to show much content they understand, rather than the processes of planning and reflection. When these summative assessments become the focus of education systems, it discourages schools from using student-led planning in their learning processes. Motivation and self-regulation are strongly influenced by what assessment systems see as

important. When assessment criteria do not recognize effort that a student puts in planning, they are less likely to spend time planning or updating their plans (Schunk & DiBenedetto, 2021).

This tension becomes particularly visible when students are engaging in self-led projects. For instance, students who dedicate significant effort to planning, researching, and revising a self-led project often find that their final results depend on performance in a standardized examination. In such cases, students feel that the planning processes encouraged by teachers has very little value in assessment and are not willing to spend time and effort. As Hattie and Timperley (2007) argue, assessment practices communicate powerful implicit signals about what is important and valued. In the Bhutanese context as well, the focus on standardized examinations as the means of determining student growth seems to have a big impact on how the teachers and students are willing to engage in student-led plans.

2.5.4 Diversity in Student Readiness

Different students engage with the planning process in a different way determined by their ability and experience. This impacts how effectively schools implement student-led planning. As per Sengodan and Iksan (2012), and Pui (2016), some students are better at setting goals, monitoring progress, and reflecting on outcomes, while others struggle without support. In certain cases, without targeted support, student-led planning could also widen learning disparities, as highly self-regulated students do well while others struggle (Pawannay et al., 2024). Younger students or those unfamiliar with independent tasks mostly struggle to set realistic goals and maintain focus. This means that different students need different level of support depending on their ability to manage the planning process. Student-led planning cannot be implemented as a one-size-fits-all approach but requires careful consideration the readiness of the students. However, as Marstaller and Amoakoh (2023) note, restricted class time,

inadequate resources, and limitations imposed by the schedule also contribute to teachers' preference for using the direct approach, rather than allowing their students to be actively engaged in learning. Such issues may become even more pronounced because of large class size or multi-age teaching, making it difficult to provide personalized assistance. According to Marstaller & Amoakoh (2023) and Tang et al. (2024), another issue that discourages students from being proactive is cultural pressure to show respect toward teachers.

2.6 Teachers' and Parents' Perceptions of the Impact of Student-Led Planning

The role of student-led planning to promote SRL, independence, and better engagement with learning is widely accepted by the teachers and parents (Zimmerman, 2002; Nicol & Macfarlane-Dick, 2006; Schunk & DiBenedetto, 2021). However, teachers and parents also express concerns related to workload, curriculum requirements, assessment systems, and students' readiness to manage their own learning (Berger et al., 2014; Mikroyannidis et al., 2014; Short & Shemshack, 2023). As a result, teacher and parent perspectives show a mix of optimism about the impact of student-led planning and considerations regarding the challenges in its implementation. Teachers and parents note that the success of student-led planning depends not only on student motivation but also on the extent to which systems support teachers and families in implementing the process.

2.6.1 Engagement, Independence, and Workload

According to teachers, engaging in planning can assist in improving student engagement and encouraging self-independence in learning. It was noted by teachers that there was improvement in engagement and ownership after the students had been provided with chances for goal setting, monitoring progress, and decision-making on the strategies that would be used to achieve those goals (Hattie & Timperley, 2007; Berger et al., 2014). Planning enables the

students to move away from being the recipients of knowledge to taking responsibility for their own learning.

Teachers face the challenge of adhering to curriculum guidelines and at the same time inspiring students to accept ownership of their learning process. Teachers find it challenging to allocate time between personalized learning activities and teaching mandatory subjects in preparation for standard assessments (Mikroyannidis et al., 2014). Education systems want to increase the role of students in learning and move towards personalized learning but mostly depend on standardized instruction and examinations as ways of determining how students grow. Workload is another concern that emerges from the teachers. According to Berger et al. (2014), for student-led planning to be effective, teachers must give feedback and track students' progress. The two roles can add to teachers' workload, especially when teaching classes where there is a diverse group of students. Other challenges for teachers include scheduling problems, working with big groups of students, and administrative demands, which prevent teachers from using student-led planning (Short & Shemshack, 2023).

2.6.2 Feedback and Contextualization

Beyond engagement and independence, teachers also highlight that student-led planning contributes to formative assessment. When students write down goals, document their progress, and reflect, teachers are able to see how students approach tasks and what forms of support may be required. Hattie and Timperley (2007) emphasize that effective feedback processes involve helping students answer questions such as, where they are going, how they are progressing, and what their next steps should be. These questions enable students to think about what evidence is there to support that they are showing progress. Student plans and reflections provide teachers with evidence that supports their assessment of the student. Planning and reflection enable both teachers and students to monitor growth. Teachers also use student reflections to identify gaps

or misunderstandings, which allow them to adjust the support and differentiate instruction (Nicol & Macfarlane-Dick, 2006; Berger et al., 2014). Mikroyannidis et al. (2014) suggest that planning makes students' learning strategies more visible and teachers are able to see whether students need support at any particular area of their planning process. When teachers understand how individual students organize tasks and deal with challenges, they are able to provide feedback more effectively. However, the effectiveness of planning as a formative assessment tool depends on how teachers are able to integrate them into their lessons and how the schools and parents value the insights emerging from these plans.

2.7 Factors Influencing Implementation of Student-led Planning

Teachers and parents generally recognize that student-led plans help the students develop the abilities to self-regulate and improve their confidence. However, whether the approach is valued at the school level depends on how much value education systems place on student-led plans. Teachers and students are more likely to engage with them when planning is seen as important and clearly reflected in policy documents. This should also by supported by consistent communication and accompanied by visible evidence of student learning and development (Marzano, 2007; Berger et al., 2014; Marstaller & Amoakoh, 2023).

The presence of clear structures and processes for planning also influences how such plans are implemented in the schools. When student-led planning is supported through structured processes, regular reflection, and check-ins, both teachers and parents are able to understand how planning contributes to student growth (Berger et al., 2014; Marstaller & Amoakoh, 2023). Structured opportunities make students' goals, strategies, and progress visible to themselves and their teachers and parents. For teachers, this allows them to track learning and provide support when necessary. For parents, these opportunities give assurance that student led planning leads to growth and not a lack of direction for their children.

Schools and parents are also more likely to support student-led planning when planning contribute directly to formative assessment. When the outcomes of student planning, such as project work, research, or reflections, are acknowledged in the assessment systems, teachers and parents can clearly see the value of planning. On the contrary, if the current assessment system persists in emphasizing standardized testing, which is highly disconnected from the student-centred approach, then planning can be considered yet another task that should be accomplished. In this situation, planning becomes an extra requirement instead of an essential component of the teaching-learning process.

The visibility of student progress also plays a crucial role in enabling the students and teachers to see the value it brings. Teachers and parents usually see the impact of practices based on observable evidence of improvement in student performance and behaviour. Research shows that stakeholders begin to embrace student planning more effectively when they see positive changes in the students' behaviors (Oller et al., 2021; Marstaller & Amoakoh, 2023). This makes it easier to believe in the narrative that planning is essential to ensure growth in the future. However, it is necessary for schools to think about how to demonstrate their progress and communicate with parents and other stakeholders.

The availability of support for the teachers in order to develop their capacities to facilitate planning also influences how teachers implement the process. How well the teachers are able to guide students has an impact on the success of student-led planning. When teachers are given professional development, time for mentoring, and other forms of support, they dedicate time in helping the students. Moreover, communication between schools and families are important as it ensures that the school and parents share similar expectations of the student. This is also because parents develop their understanding of student-led planning and its use for the students based on information received from the schools. When schools are able to share why planning

is done, what the students need to do and the ways parents can support learning at home, parents develop confidence and willingness to support the students. Regular updates, progress reports, and opportunities for conversations with the teachers help parents see how planning is helping the growth of the student. In addition, how the student engages with the process and demonstrates growth to parents or teachers influence how teachers and parents see the of student-led plans. Student-led planning tends to be viewed more positively when students demonstrate the ability to set realistic goals, manage their time, gather evidence of growth and demonstrate to their parents and teachers how they are growing.

3. Roadmaps in the Bhutan Baccalaureate

3.1 The Role of Students in the Bhutanese Education Discourse

Before the 1960s, education in Bhutan was provided by monastic establishments, in which the emphasis was on religious philosophy and spirituality (Wangyel, 2001). The monastic organizations were instrumental in propagating Bhutanese culture and traditions. From the early 1960s, Bhutan moved to a modern system of education with aspirations to allow younger generations to receive modern schooling so that they are able to contribute to the nation building. The establishment of schools across the country expanded schooling opportunities for the children and introduce them to subjects such as Mathematics, Sciences and History (Schuelka & Maxwell, 2016; Dorji, 2021). While this transition improved access to education and supported goals of national development, it also introduced ideas and values that were borrowed from other contexts.

The relevance of the curricula and policies borrowed from other countries to Bhutan's unique cultural and its impact on the Bhutanese values have since been widely discussed (Schuelka, 2012; Tobden, 2022). Cultural concepts such as *tha dam-tshi*, that refers to integrity, trust, and moral commitment in relationships, and *ley ju-drey*, which reflects the belief in the moral consequences of one's actions continue to influence the way of life in Bhutan (Wangyal, 2001). These values also influence expectations about responsibility, community relationships, and the purpose of education in Bhutan. As a result, education reforms in Bhutan have since been trying to balance the demands of preparing students for the modern world while also efforts to preserve Bhutan's cultural identity (Schuelka & Maxwell, 2016). Since the 1970s, Bhutan adopted the philosophy of Gross National Happiness (GNH) as a way of guiding the approach to development, including education. GNH emphasizes a holistic approach to development that takes mindful consideration of balancing economic progress with cultural and environmental

preservation, and good governance (Ura, Alkire, & Zangmo, 2012). The role of education in helping citizens grow with as citizens who embody the values of GNH has been widely recognized and reform initiatives have since attempted to bring more focus on the holistic development of students.

Despite these commitments, Bhutanese education system has faced many challenges related to centralized curricula and standardized assessment systems. The curriculum and assessment systems does not leave the flexibility for schools to take into account the diverse needs of students and allow students to be involved in their learning. There is also not much space and requirement for schools to tailor learning to their local contexts (Deema, 2020; Dorji, 2021; Gyeltshen & Zangmo, 2021; Tobden, 2022). With the aim of changing this, the Education Blueprint 2014-2024 was launched. The Blueprint highlights the importance of bringing focus on skills such as critical thinking, creativity and problem-solving skills (Ministry of Education, 2014). In addition, the Blueprint also aimed to shift the role of students from being recipients of knowledge to ones who will lead their own learning.

The Royal *Kasho*[3] on Education Reform provides clear indications regarding the role of education in helping Bhutanese youth learn how to deal with an ever-evolving world while being able to grow with the Bhutanese values. In doing so, the Kasho highlighted the need to help students develop curiosity, creativity, resilience, and critical thinking. It also stressed that education should enable students to become active participants in their own learning rather than simply following structured pathways. While the vital role of students in their learning has been put forward in most policy documents, the education system in Bhutan continues to rely on

[3] A *Kasho* is a proclamation by the King of Bhutan on matters of national importance which directs and authorizes action by civic bodies.

systems and policies that are borrowed from other countries. As a result, standardized curricula and examinations continue to influence the education leaving very little space for students to be involved in their learning process. As a part of the ongoing reform, the Ministry of Education and Skills Development decided to adopt the BB in 24 schools across Bhutan in 2021. This also provided the opportunity to understand how the BB's approach to learning, assessment and reporting can impact student learning in these schools.

3.2 The Concept of Roadmaps in the BB

The concept of student Roadmaps in the BB emerged from a recognition that traditional schooling does not create space for students to take active roles in their learning (Druk Gyalpo's Institute, 2018). While the idea of Roadmaps was discussed in detail in the documentation of the BB (for example, Druk Gyalpo's Institute, 2018, 2024), the initial ideas of the Roadmap was highlighted much earlier. Kapur (2006), who plays the lead role in the articulation of the BB, states that joy, ownership and decision-making form important part of the learning process for the students, noting, "we need to have certain learning goals for students, the students themselves decide how and for what the tools of learning are to be used and the direction of the movement." (p. 20). This idea is extended further in Kapur (2020) where the concept of Roadmaps is more explicitly discussed.

> "A Roadmap is a tool that can be effectively deployed in taking ownership of our learning. It is a well-thought-out plan of action that guides us to where we want to go. It factors in the process, the milestones and anticipated challenges." (p.100)

As discussed earlier, education in Bhutan was influenced by borrowed curricula, teacher-led instruction, and standardized testing as the primary way of measuring success of students.

Within the wider movement for education reform in Bhutan, the BB sought to respond to this challenge by repositioning students as active participants in learning rather than recipients of instruction (Druk Gyalpo's Institute, 2024).

At the DGI, Roadmaps were introduced as mechanisms for translating BB's philosophy of ownership, holistic development, and contextualised learning into a systemic process (Druk Gyalpo's Institute, 2018). The Roadmap at an individual student's level is seen as a personal plan. The Roadmap is meant to assist students to know themselves, their current strengths and areas for improvement, the direction they want to develop, as well as the path through they will choose. As indicated in the BB literature, Roadmaps in Bhutanese schools are associated with the belief that students need to be aware of their abilities, weaknesses, interests, tendencies, and future intentions in relation to the Five Areas of Development (Druk Gyalpo's Institute, 2018, 2024). This implies that Roadmaps are meant for more than simply academic purposes. Students are expected to think beyond just scores and examinations, but also about well-being, character traits, and aspirations for life. According to Chhomo et al. (2025), Roadmaps are described as the fundamental process of developing trust and teamwork. The process usually involves a student working with their mentors to create their Roadmaps which are revised as the student progresses, usually drawing upon feedback from the teachers.

The reason behind the use of Roadmaps for students, therefore, becomes linked to students' ownership of learning. Rather than depending upon teachers to determine what they have to learn, the students are meant to set their own goals for themselves. These may include improving their habits, feeling more confident about their communication skills, dealing with their emotions in an effective manner, making contributions to society, establishing more healthy routines, or practicing reflection.

Another purpose of Roadmaps is to make students and teachers dedicate time and effort in showing visible growth. Many important qualities, such as confidence, resilience, empathy, discipline, or self-management, often remain invisible in the reports generated by the schools. This is because they are not systematically tracked (Druk Gyalpo's Institute, 2024). Roadmaps provide a structure through which students can identify these qualities, plan for them, and gather evidence of progress. In doing so, conscious effort is put into thinking about how a student wants to develop these qualities and putting plans into place instead of assuming that these qualities will develop on their own.

In this case, the Roadmaps in BB are not meant to be filled by the students alone in isolation. The mentors will interact with the students to discuss about aspirations, goal setting, challenging assumptions, taking actions towards achieving the goal, and assessing their progress (Druk Gyalpo's Institute, 2024). What this implies is that the Roadmap serves both as a tool for the personal development of a learner as well as a means through which other people get to see what aspect of his or her development he or she focuses on. In essence, it is a medium of communication through which a learner and his or her mentor get to engage in discussions about his or her growth (Druk Gyalpo's Institute, 2024).

Student Roadmaps are also designed to support contextualised learning. Because students differ in their interests, challenges, circumstances, strengths, and aspirations, the BB diverges from the assumption that all learners should follow identical path of learning (Druk Gyalpo's Institute, 2018). Roadmaps allow learners to pursue goals that are relevant to an individual while still operating within the wider values and expectations of the school. Students may choose different areas to focus on while there might also be some areas that all of them are

required to work on. In this way, the Roadmap recognises diversity in learner pathways while maintaining coherence through the Five Areas of Development.

There is no indication that roadmaps are supposed to be a one-off exercise. According to BB, Roadmaps are meant to be dynamic and change with the growth of the students (Druk Gyalpo's Institute, 2024). It is important for students to keep updating their goals, assessing how they are achieving the goals, updating their plans, and setting higher challenges for themselves. This cycle emphasizes the fact that learning is dynamic, rather than linear. Success does not only mean reaching a goal but also in being able to reassess and change things.

4. Current Study

As discussed in the earlier section, the policy changes in Bhutan emphasize the importance of allowing students to be active participants in their own learning. However, despite these aspirations, practices in many schools continue to be guided by standardized curricula and examination systems that does not give many opportunities for students to actively design and lead their learning experiences.

Despite the fact that the use of Roadmaps is considered as one of the strategies through which the participation of students in the process of learning can be ensured, there have not been many studies which actually investigate the actual functioning of the Roadmaps in the context of the BB schools. Moreover, there are very few accounts of how students react towards the use of the Roadmaps, how they are assisted by the teachers and parents in planning the Roadmaps and what obstacles students face when designing and implementing the learning goals.

This study seeks to explore how student-driven Roadmaps influence learning processes within the Bhutan Baccalaureate context. Through the examination of student and teacher perspectives, the study attempts to understand the impact of Roadmaps on the learning journey of the students, the role of teachers, parents, and peers in supporting students in the Roadmapping process, and the challenges students and teachers encounter in creating and using Roadmaps and how these challenges influence their learning experiences. To gather these experiences, the following research questions are posed:

1. How do students and teachers perceive the impact of Roadmaps on student learning?
2. What role do teachers and parents play in the Roadmapping process and its effect on students' learning? How do the perspectives of students and teachers connect with each other?

3. What challenges do students face in designing and implementing their Roadmaps, and how do these challenges influence their learning?

4.1 Research Design

In this study, the main goal was to analyze the ways how students and teachers were impacted by Roadmaps at the BB schools. Specifically, the researchers tried to identify how students perceived the importance of Roadmaps in their learning processes, how teachers, peers, and parents could facilitate students' Roadmapping, and what problems emerged when the participants developed and implemented their Roadmaps. The research was conducted in accordance with the broader context of education reforms in Bhutan, which require the active participation of students in their learning. As it is an exploratory study, which required understanding the experiences of participants, the researchers decided to adopt the qualitative approach to their investigation. It should be noted that qualitative research suits well for those studies where the researchers need to understand participants' experiences and interpretation of reality (Merriam & Tisdell, 2015).

The qualitative approach would allow the researcher to appreciate the richness of the views held by the participants as well as compare the views of the students and teachers. This type of approach is appropriate for the current study since the adoption of Roadmaps in the BB context is quite new and still under-researched. Exploratory research design would enable the researcher to find out the relationship and pattern of things that have not yet been conceptualized in the existing literature (Thomas, 2006). The current study would seek to find out how Roadmaps affect learning, how various parties utilize Roadmaps, and whether their utilization is in line with the purpose of Roadmaps at the BB.

Data was gathered using semi-structured interviews since it gives room for the participants to explain their experience in great detail. However, the researcher is flexible enough to address new ideas that might arise from the discussion. This helped to ensure that the interview process was consistent with the research goals but still enabled the participants to address new concepts that came up.

4.2 Sample

The study targeted high school students in grades 11 and 12 and teachers involved in the BB at selected schools. The target group was chosen based on two reasons; first, high school students are experienced in using Roadmaps and can evaluate their learning processes critically. Second, high school students can express their ideas and experiences better than their junior colleagues. On the other hand, teachers were included in the sample since they are involved in mentoring students in the process of creating Roadmaps. In the BB, teachers mentor students in setting their goals, self-reflection, and improving Roadmaps. Consequently, the inclusion of students and teachers in the sample allowed the researcher to obtain different opinions on the effects of Roadmaps and the process among schools.

The participants were identified through purposive sampling in order to get individuals who have an experience concerning the issue being investigated (Patton, 2015). The students and teachers who have been involved in the construction of Roadmaps for a period of not less than three years were chosen so that the experiences and difficulties encountered could be known. Since there was a connection between the researcher and the principals in the schools, the researcher made direct contact with the principals requesting nominations from among teachers and students to be included in the investigation. A total of eight students and five teachers were selected to participate in this study as shown in Table 1 below.

Participant	**Grade (only for students)**	**Gender**	**Experience with the BB (in years)**
Student 1	11	Female	5
Student 2	11	Male	5
Student 3	12	Female	4
Student 4	12	Male	5
Student 5	11	Female	4
Student 6	12	Male	5
Student 7	11	Female	5
Student 8	12	Female	5
Teacher 1		Female	7
Teacher 2		Male	6
Teacher 3		Male	5
Teacher 4		Female	4
Teacher 5		Male	5

Table 1. Demographics and characteristics of participants.

4.3 Instruments

Semi-structured interviews were used as the primary instrument for data collection. Semi-structured interviews were chosen because it allows researchers to explore participants' experiences and perspectives. Semi-structured interviews are particularly useful because they

provide a balance between structure and flexibility (Adeoye-Olatunde & Olenik, 2021). While the researcher prepares a set of guiding questions in advance, the conversation can evolve based on participants' responses, allowing the researcher to probe further into emerging ideas and explore topics that participants consider important. The interview guide was designed around the three main objectives of the study and consisted of three broad sections. While the focus for students and teachers were very familiar, the design of questions differed slightly. For the students, the interviews focused on,

1. Their experiences with Roadmaps and their influence on learning
2. The role of teachers, peers, and parents in supporting the Roadmapping process
3. Challenges encountered while creating and implementing Roadmaps

Likewise, for the teachers, the interviews delved into,

1. How they observed the role of Roadmaps in student learning.
2. What roles they played in the student Roadmaps
3. Any challenges they noticed the students facing or difficulties faced by teachers and possible solutions for these challenges.

Before conducting the interviews, the researcher conducted preliminary interviews with some students engaged in the EdLearn programme in the University of Turku to obtain comments on and refine the interview questions. The interviews started with the general questions concerning participants' school experience and participation in the BB. Such a procedure aimed to help build rapport between the researcher and participants and thus enable an open exchange of views on the topic under discussion. Next came the questions related to participants' experience with the Roadmaps, specifically how they make their Roadmaps, how they track their progress, and what impact the Roadmapping process has on their studies and motivation. Further,

additional questions pertained to the involvement of teachers, mentors, peers, and parents in the learning process of their students

4.4 Procedure

Data collection took place between December 2025 and March 2026 during which the researcher conducted individual interviews with participating students and teachers. Before the interviews were conducted, the principals were informed about the purpose and objectives of the study. The principals nominated the participants and introduced them to the researcher. Before individual interviews, participants were informed about the purpose of the study and that participation in the study was voluntary with the opportunity to withdraw from the study at any point. Each interview was conducted in a conversational manner so that participants can shared about their experiences with Roadmaps. Interviews typically lasted between 40 minutes and one hour, depending on the depth of the discussion and the participants' responses. Some interviews were conducted face to face while others took place over Zoom as the researcher could not travel to all the schools. With participants' consent, the interviews were audio recorded to ensure accurate documentation of the conversations. Transcription of interviews was also done word for word later. The researcher also noted down observations during the interview, as suggested by Fraenkel et al. (2011). The researcher made observations after every interview and noted down the observations. Such notes were useful for the researcher in reflecting upon the process of conducting interviews and identifying possible themes for the analysis stage.

4.5 Analysis

The data collected through interviews was analyzed using thematic analysis, which was conducted following the six-step procedure as per Braun and Clarke (2006). Thematic analysis is commonly used because it offers the opportunity for the researchers to find, analyze and

interpret patterns within the data. Though some of the identified themes would have been determined from the questions asked during interviews, an inductive approach to analysis was chosen in the sense that themes would emerge from the data. This approach was taken considering the absence of any literature on the BB that would help identify any pre-existing themes. An inductive approach made it possible for the researcher to be open to new ideas and patterns that could be revealed through the data.

During the familiarization phase, the researcher read the interview transcripts multiple times to become familiar with the data. Initial observations and ideas were recorded by the researcher. Data coding was done using Nvivo 15.4.0 to identify codes from the transcript. Segments of text that represented meaningful ideas related to the research questions were coded. These codes captured key concepts related to students' experiences with Roadmaps, their perceptions of learning, and the roles of teachers and parents. Next, related codes were grouped together to form preliminary themes. These themes represented broader patterns within the data. Multiple instances of codes that came up were used to define the overarching themes, while the remaining codes that fitted within a theme were included as sub-themes. The themes were revised to check whether they actually reflected what the data was all about and if they had differences. The process of redefining, recoding, and restructuring continued until a thematic map was developed.

4.6 Quality Criteria

In this study, Lincoln and Guba's (1985) criteria for the quality of research was followed. This enabled the researcher to ensure that the research process has been conducted in a rigorous, transparent, and trustworthy manner.

Credibility

Credibility shows how the researcher's findings represent the experiences of the participants emerging from the data (Lincoln & Guba, 1985). In this study, the interviews were transcribed verbatim in order to ensure that no experiences of the participants were left out. The researcher read the transcripts twice and compared them with the notes taken during the interviews to ensure that all that the participants shared were taken into account while transcribing the interview. In the coding process, direct quotes from the participants were used to support the conclusions made by the researchers. In most cases, conclusions are supported by at least two direct quotes from the participants.

Dependability

Dependability describes how the research has been conducted in a transparent manner (Lincoln & Guba, 1985). Detailed documentation of the process is useful as it allows others to see how the study can be replicated. In the current study, the researcher maintained records of the process from recruiting participants to collection and analysis of data. The emails and messages exchanged between the researcher and the principals of the schools have also been maintained. Different versions of the interview guide have been maintained with colour coding of the changes made in order to show how the guide developed over time through feedback and reflection. Coding scheme also reflects additions to the code descriptors to indicate how the decisions around coding evolved as well as for any other person to be able to code interview transcripts if they are to repeat this study.

To ensure that the researcher's codes were transparently determined, another researcher based in Bhutan independently coded two student interviews and one teacher interview. The independent coding showed an initial agreement of 68.25% between the two coders. Disagreements were mostly around the role of parents in the Roadmap process as well as the

interpretations of the challenges. Through discussions, the researcher and the coder resolved the disagreements and updated the coding scheme. The researcher re-coded all the transcripts based on the updated coding scheme.

Transferability

Transferability is the extent to which the findings of a study is applicable to other contexts or geographical locations (Lincoln & Guba, 1985). To ensure transferability, researchers usually provide detailed descriptions of the research context and participants so that readers are able to determine whether the findings may be relevant to similar contexts.

In this study, information about the research context, including the BB programme and the role of Roadmaps in the learning process, was presented in the background section. In addition, descriptions of the participants, methods of data collection and analysis were included in the methodology section. When these detailed descriptions are provided, the readers are able to determine how relevant the methods and findings of the current study could be to their own contexts.

Reflexivity

Reflexivity is the process through which researchers critically examine their own role, assumptions, and influence on the research process (Korstjens & Moser, 2018). Reflexivity is particularly important because researchers also influence how data is collected, interpreted, and presented. In this study, the researcher's familiarity with the Bhutanese education system, knowledge of the BB, and interest in understanding educational could have impacts on the interpretations. The familiarity was useful building connections with the participants as well as determining which questions to ask in the interview. In terms of interpretation, the familiarity with the system also enabled the researcher to view the responses and experiences from the

participants within the wider education system and cultural experiences of the Bhutanese participants.

However, the researcher's familiarity with the BB also posed risks. Prior experience with the BB and understanding of the education reform in Bhutan would have led to assumptions as well as being selective with themes while coding. It was important for the researcher to be aware of these risks and ensure that the researcher engaged in self-reflection throughout the process. In the data collection and analysis, the researcher maintained notes to keep track of decisions and to ensure that biases are minimized. Original transcripts of the interviews were revisited while coding to ensure that the codes emerged from the data and that themes are not overlooked. In order to ensure that the codes were accurately determined, a process of double coding was carried by another researcher.

4.7 Ethical Considerations

Ethical considerations were an important aspect of this study, particularly because the research involved students. Before the data collection process started, the researcher got in touch with the principals and provided them with an understanding of the purpose of the study and requesting them to nominate the participants. Once the principals nominated the participants, the researcher sent them emails with purpose of the study consent form for participation in the study. Participants were also assured that their responses would remain confidential and that their identities will not be used in the report. Codes were assigned while transcribing the data as well as in the reporting to ensure that the participants identities were protected. All audio recordings and interview transcripts were securely stored and only accessible to the researcher. Participants were also given the choice of withdrawing from the study at any time.

5. Results

Various themes have been identified in relation to the experiences of the students and teachers with the use of Roadmaps. The themes illustrate how Roadmaps can be used as tools for setting goals, reflecting on one's progress, and promoting self-growth. On the other hand, the institutional structures that enable or hinder the use of Roadmaps are also shown in the identified themes. It is important to note that Roadmaps had a positive impact both for students and teachers; however, there were certain aspects where their views differed. Some of the main themes identified are:

- Purpose of Roadmaps
- Impact on Learning and Development
- Reflection and self-monitoring
- Role of mentors, teachers, and peers
- Challenges
- Parent involvement
- Improving Roadmaps

Figure 1 below represents these themes and the sub-themes that emerged from the data to present an overview of the main discussion points which will be discussed in more detail in this section.

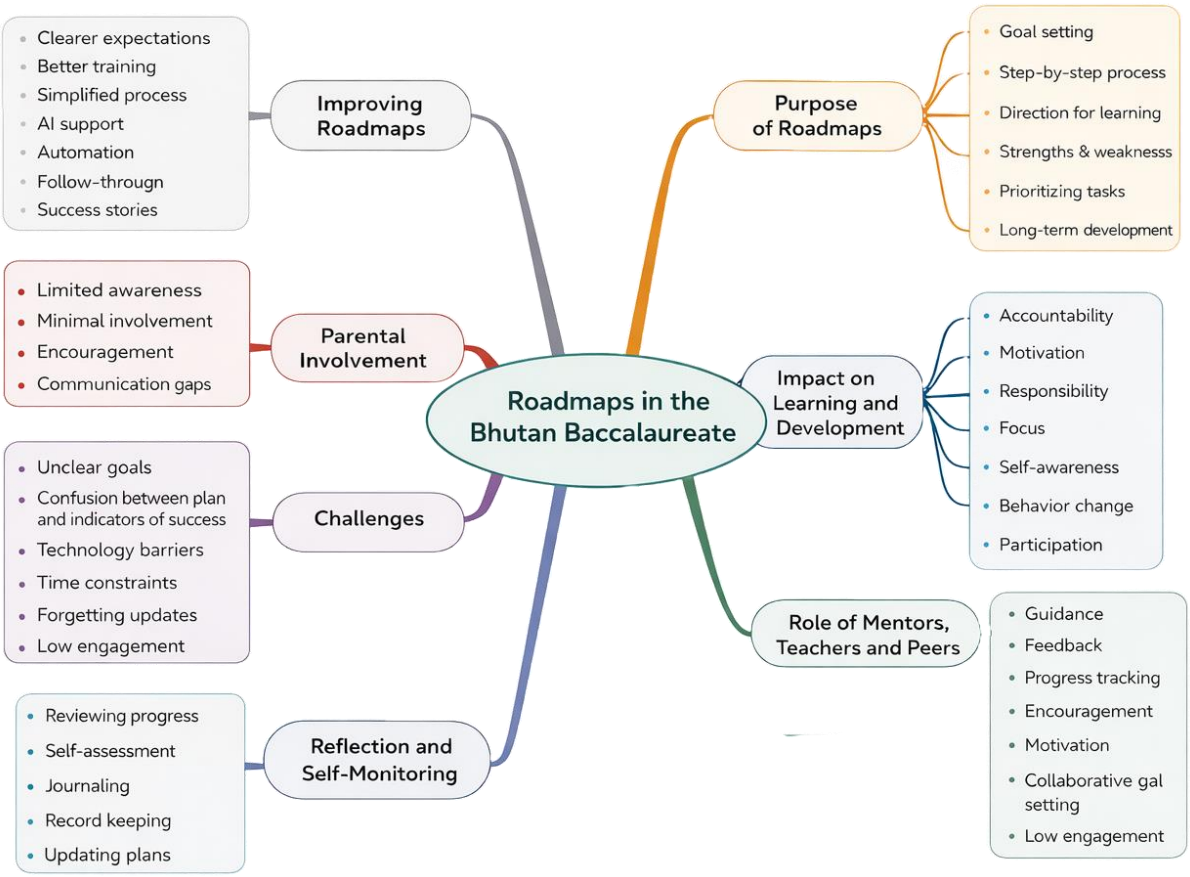

Figure 1: Themes and sub-themes that emerged from the interviews

The Roadmaps seemed beneficial for both teachers and students regarding goal setting and self-motivation. Yet, while students mostly concentrated on the practical aspects of the Roadmaps (like goal organization and skill improvement), teachers saw their value in terms of reflective practices and holistic development. Table 2 below is a summary of the opinions of teachers and students in respect to various themes. Nevertheless, both teachers and students agreed that the biggest facilitator for the Roadmapping process was the presence of mentors. Students mentioned additional factors besides mentor influence, which include communication with friends and reflective practice, while teachers considered structured approaches (such as mentoring programs and goal setting) more crucial to the process. Several challenges were recognized, too, including poor availability of technologies, ambiguity regarding some elements of the Roadmap, and inconsistent involvement. In general, those barriers are systemic,

not personal. As for the participants' attitudes to parents, it is important to note that both parties do not find them significant for the process.

Theme	Student Perspectives	Teacher Perspectives
Understanding the Purpose of Roadmaps	Roadmaps as goal-setting tools and personal trackers for improvement.	Roadmaps are seen more broadly as a framework that encourage reflection and goal setting.
Impact on Learning and Motivation	Roadmaps increase motivation, responsibility, and focus. Some described feeling accountable once a goal is written down and experiencing motivation when teachers noted their progress.	Observe changes in student engagement and participation. When students know mentors are aware of their goals, they try harder and participate more actively.
Personal Development	Report improvements in confidence, social skills, and personal growth. Some students explained how Roadmaps helped them become more confident or socially active.	Observe improvements in social behaviour, awareness, and self-reflection among students who actively engage with Roadmaps.
Role of Mentors	Mentors are seen as the main source of support in creating and updating Roadmaps. Mentors help them identify areas of improvement and review progress.	Mentors play a central role in guiding students, clarifying goals, and monitoring progress. They see mentor engagement as essential for the Roadmap system to work effectively.
Role of Teachers (Domain Teachers)	Students report that domain teachers provide occasional advice related to academic goals. Domain teachers are not directly involved in the process.	Domain teachers influence Roadmaps indirectly, usually by suggesting goals related to academic improvement- this seems to be mostly for students who need improvement.
Peer Influence	Friends influence their goals, encourage improvement, and provide support through conversations and shared experiences.	Peer influence occurs mainly through role modelling, especially when responsible students demonstrate strong commitment to their Roadmaps.
Reflection and Self-Monitoring	Use journals, notebooks, or notepads to track their progress and later update their Roadmap on the digital platform.	Reflection is a key part of the process, teachers encourage students to evaluate their own growth and learning experiences.

Challenges in Using Roadmaps	Difficulty defining goals, confusion about Roadmap components, and limited access to technology.	Student's willingness to engage with Roadmaps, time constraints, and inconsistent student engagement.
Parent Involvement	Very limited parental involvement, often because parents are unfamiliar with the Roadmap.	Parents rarely engage with Roadmaps, although they believe parental awareness could improve student support.
Suggestions for Improvement	Clearer explanations, more guidance for new students, and better use of technology such as AI or simplified tools.	Simplifying the system for younger students, improving technology platforms, and increasing mentor engagement.

Table 2: Variations in Student and Teacher Perspectives on the Roadmap

5.1 Understanding the Purpose of Roadmaps

The students and teachers agreed on the role played by Roadmaps in helping students set goals and monitor their progress. Yet, there was some variations in the level of agreement in their perceptions. The students perceived Roadmaps as means for setting goals and structuring their plans, whereas the teachers viewed them as processes promoting self-reflection and giving them ownership learning. According to the students, the Roadmaps assisted them in structuring their goals and defining what they needed to accomplish. Some of the students felt that through Roadmaps, they became more aware of what they were doing. One of the students said:

"For me, a Roadmap is a set of goals that I set for myself. It helps me focus on what I really want to do. When I was in my previous school, I didn't know about Roadmaps, and I struggled to figure out what I wanted to achieve and how to define my goals clearly. Personally, I feel that Roadmaps are very useful for students, and they can also be applied in other settings. I use a Roadmap mainly to organize and track my goals." (Student 6)

For some students, Roadmaps functioned as tools for observing their growth and identifying mistakes:

“Roadmap is like a tracker where you can observe how you grow. It helps you identify mistakes and learn from them. I use my Roadmap to see how well I can achieve certain goals. I set goals for developing new skills and also for improving habits and turning them into better ones.” (Student 1)

“It is a step-by-step pathway. It is a platform that shows us where we are now and where we will be in the near future.” (Student 3)

Teachers were also seen to use Roadmaps as guides for helping their students develop. However, they placed much importance on the process of mentoring and reflection. Here, it appears that the teachers reflect on how they can help the students become engaged in and hone their goals, sometimes considering why one goal is more important than another.

One teacher explained:

“As a mentor, first you need to understand the goals of your mentees, what they actually mean when they write something in their Roadmap. Once you understand that goal, you have to consistently track what students are doing and what they want to achieve.” (Teacher 1)

Another teacher explained that Roadmaps help students clarify what they want to do:

“Students try to create Roadmaps in order to get a clear picture of what they are trying to do. In terms of implementation, they also try to follow through on what they have reflected in their Roadmap.” (Teacher 5)

Roadmaps serve as a mechanism for clarifying what the student wants to achieve. It was evident from the views of teachers that the Roadmaps were mechanisms that help in the development of skills like reflective thinking, planning, and sense of ownership among students to allow

them to become self-directed learners. With such an understanding, Roadmaps were not merely planning tools but were rather mechanisms that enabled students to reflect on their learning processes, self-growth, and future aspirations continually. The most common aspect that was discussed by teachers is that the process of Roadmapping allows students to reflect on their strengths and weaknesses, assess their performance in various developmental aspects, and make changes to their plans over time. Roadmaps appear to be part of a larger mechanism used by teachers to transform students into self-directed reflective learners able to take charge of their learning outside the school environment.

In contrast, students characterized the role of Roadmaps in very pragmatic terms. The majority of students considered Roadmaps as devices that assist them in organizing their objectives, monitoring their actions, and managing their activities. Students were interested in how Roadmaps could contribute to structuring their learning process, setting targets, and remembering the things they had to do. In the case of students, the practical use of Roadmaps appeared in providing assistance in defining the objectives and understanding how progress could be monitored.

The above indicates that both the teacher and the student have their own approaches to the Roadmapping process, which do not necessarily negate each other since the two have different functions during the learning process. The teacher focuses on the end results of using Roadmaps, while the student deals with them at an operational level.

5.2 Impact of Roadmaps on Learning and Motivation

Roadmaps, when used well, influence students' motivation and engagement with learning. Many students described how writing goals in a Roadmap creates a sense of commitment and

responsibility. Teachers also shared that students become more conscious of their efforts once they have formally written their goals and committed to achieve them.

“I think Roadmaps create a sense of responsibility. When you write down a goal, you feel accountable for achieving it. For example, when I start to slack off, there is a small voice in my mind reminding me that I already committed to this goal in my Roadmap.” (Student 7)

“Setting goals through a Roadmap makes me more aware of what I’m doing. It helps me stay focused and be more sincere about my learning. Before using Roadmaps, I often had to rely on memory, and I frequently forgot what I had done. It didn’t help me grow much. After starting to create Roadmaps and define specific goals, I became more focused and organized in my learning.” (Student 2)

Another student highlighted the motivation behind reviewing goals:
“For example, when we feel down and think ‘I can’t do that,’ the Roadmap helps. Looking at the Roadmap reminds us of our goals and helps us stay motivated to improve.” (Student 3)

Teachers also described observing changes in student behaviours when Roadmaps are used effectively.
“When they really engage with their Roadmap and when we try to understand their aspirations, they tend to open up more. They start putting in more effort.” (Teacher 1)

“If students take their Roadmap seriously, they try harder because they know that their mentor is aware of their goals.” (Teacher 2)

For teachers, the effectiveness of the Roadmaps in helping the students develop reflective practice lies in encouraging the habit of being reflective and being aware of one's performance. According to the teachers, it is important that the students have a Roadmap, as it enables them to think about what has been done, to reflect on their achievements and to plan future steps. The teachers warned that for the effectiveness of the Roadmaps it is important how responsible and initiative the students are. Although a Roadmap gives the opportunity for a reflective and goal-oriented practice, its effectiveness can depend on whether all students will make use of such an opportunity. Teachers see that it is important for students to be motivated in order to set realistic goals, monitor their progress and reflect upon their achievements and difficulties. It is necessary that students accept full responsibility for their own progress and success. As the teachers observe:

“Currently, Roadmap ownership is mostly self-driven. If a student is committed, it works well; if not, the process becomes superficial.” (Teacher 2)

“Whether students actually follow through with the goals they create depends on how consistently the mentor checks their progress… but also on what the students think and what they report they are doing.” (Teacher 1)

However, it is worth noting that some students expressed concern about the fact that motivation to work on the Roadmaps does not necessarily come automatically within the framework of the activity itself. They claimed that mentoring help and motivation of some sort from the side of mentors is one of the main factors enabling them to continue working on their plans. According to students' observations, at times, the discussions held during the mentoring sessions became an important motivating factor encouraging them to think about the outcomes that they had achieved and update their Roadmaps if necessary.

Thus, despite the fact that Roadmaps are supposed to contribute to developing students' intrinsic motivation and ability to learn autonomously, mentor participation still has a considerable impact on the process of using Roadmaps. The very fact of the availability of mentors ready to help and control students' performance makes it easier for them to appreciate the necessity of Roadmaps.

5.3 Reflection and Self-Monitoring in the Roadmap Process

Participants viewed the Roadmap as more than just a set of goals to achieve. It was also considered as an important tool for reflecting on progress made by students and making them conscious about learning processes. As pointed out by participants, reflection enables students to identify those accomplishments that need attention and areas in which they still need to work hard. Mentoring is also considered as an essential process of reflection, since it helps students learn to reflect on progress and be aware of themselves. There are certain techniques that help students reflect upon their progress prior to modifying the Roadmap. Given that students do not always have immediate access to the digital tool, keeping notes in journals is also considered as an alternative method.

“In our mentor group we have a mentor-mentee notebook, where I sometimes write down my goals. I also keep a journal, where I write about what I did during the day. When I reread my journal later, especially during mentor meetings when we have access to laptops, I realize that I have already been working toward my goals. That helps me update my Roadmap later.” (Student 1)

“Personally, I carry a small notepad. Whenever I do something related to my Roadmap, I try to write it down. However, carrying a notepad everywhere can be inconvenient. Often, I rely on my memory and update the Roadmap later when I have free time.” (Student 8)

While most of the documentation regarding the Roadmap depends on technology, there is evidence that reflection also takes place outside of this through informal documentation and self-reflection prior to updating the Roadmaps. Reflection was also considered crucial by teachers when it came to mentoring. It was more important for mentors to facilitate reflective thinking rather than ensure students were completing tasks. As one of the teachers stated:
“Most of the assessment should come from the students themselves. I emphasize that they should be their own assessors and reflect on their learning. I constantly tell them that if they reflect on their growth, only then will I be able to comment meaningfully as a mentor.” (Teacher 1)

Another teacher shared how reflection becomes visible when students are willing to share updates about their progress. This enables the student and the teacher to engage in discussions:

“Sometimes students whom I do not even teach come intentionally looking for me just to tell me, ‘Madam, I have done this today.’ That shows that reflection is constantly on their mind.” (Teacher 1)

5.4 Role of Mentors, Teachers, and Peers

Although the Roadmap process encourages student autonomy in the learning process, both the students and the teachers highlighted that the mentoring concept is an important component in facilitating the students towards the setting of goals, reflection, and monitoring of their progress. The mentoring was defined by the students as the process whereby a mentor assists them in

coming up with the Roadmap and improving it when need be. The mentor is involved in assessing the students' weaknesses, monitoring their progress, and ensuring that the students stay focused and committed to their goals.

"Whenever I complete a goal, my mentor writes a short note explaining how they see my progress and how I could improve. Even though the comments are short, they help me reflect on what I am doing and sometimes change how I look at things." (Student 1)

Another student described how mentors help them see both strengths and weaknesses during the Roadmap process:

"My mentor usually highlights general areas where I need improvement. She also gives positive feedback about areas where I'm doing well. This helps me track my progress and avoid repeating mistakes." (Student 2)

Mentorship was seen by teachers as a continuous process in which the teacher seeks to understand the goals of the students and helps them in refining their knowledge about those goals. A key point raised by one teacher was that:

"As a mentor, first you need to understand the goals of your mentees, what they actually mean when they write something in their Roadmap. Once you understand that goal, you have to consistently track what students are doing and what they want to achieve." (Teacher 1)

Teachers described how mentoring involves helping students think about ways to convert abstract aspirations into concrete goals and determine what outcomes. For instance, one teacher explained how discussions with students help clarify the meaning of goals:

"…a student might say they want to come out of their comfort zone. I would ask them what that actually means for them. Some students interpret it as volunteering or participating more, but each student defines it differently. My main focus was on clarifying the goal and identifying a measurable indicator of success." (Teacher 2)

In addition to mentors and teachers, peers were also identified as important influences in helping students' create their Roadmaps. Students described how conversations with friends often inspire them to reflect on their own goals and development. One student described how peer relationships influence their personal growth:

"My Roadmap is heavily influenced by my friends. The type of person I have become here depends a lot on the friends I have around me. Since my friends encourage each other to improve and succeed, my Roadmap often reflects goals about becoming better and helping others." (Student 1)

Teachers also observed that peer influence often encourage students to work on their Roadmaps:

"If one mentee is very responsible and consistently talks about their Roadmap and goals, it influences others, especially younger students. They share examples such as books they are reading or activities they are doing." (Teacher 1)

While the roles of mentors and teachers were discussed in detail, most students did not clearly see how teachers, in their roles as subject teachers influenced the goals in their Roadmaps. Teachers, similarly, highlighted that they mostly look at the Roadmaps of their mentees and do not suggest goals for the students who are not their mentees. In some cases, teachers highlighted suggesting goals for subjects if a student is struggling to meet expectations. This highlights the

need to bring strong connections between the goals in the Roadmaps and what the students are studying in the domains to bridge the gap that currently exists.

5.5 Parent Involvement in the Roadmap Process

The role and involvement of parents in the Roadmap process seems to be limited. While parents often support their children's education in broader ways, they are not directly involved in the creation or monitoring of Roadmaps. In most cases, students and teachers were also sceptical if the parents are aware of the Roadmaps that the students are creating. Although the process for parental involvement is not clearly articulated in the BB documents, parents are highlighted as important stakeholders in the Roadmap creation process.

Some students explained that their parents are not fully familiar with the Roadmap:

"Currently, I haven't shown my roadmaps to my parents. However, I think it would be a good idea to share them, so they understand what I'm doing at school. They know that I create roadmaps, but they don't fully understand how they work or how they help me." (Student 2)

"Sometimes I tell them, and they usually say that if I am able to do it, it will be helpful for me. They encourage me in that way." (Student 7)

Teachers also reported limited direct involvement from parents in the Roadmap process.

"To be honest, I have rarely seen parents comment on their children's Roadmaps." (Teacher 1)

Another teacher noted that parents often learn about their children's goals only during formal school meetings:

"We meet parents twice a year. Once before midterm and once after. During the second meeting we discuss their children's Roadmap more specifically." (Teacher 4)

Although parents play an important role in supporting their children's growth and education, their involvement in the Roadmapping process seems to be secondary and minimal. It can be noted that parents always play an important role in fostering and encouraging their kids by giving them some directions and raising certain expectations regarding their growth. Nevertheless, it is rare for parents to be actively involved in working with their children in designing, analyzing, and updating their Roadmaps.

However, the role of parents in relation to Roadmaps is not always understood entirely by them. Although the active participation of parents in the learning of their children could be observed, parents do not always understand Roadmaps and how they are used. Therefore, their role is mainly supportive and is aimed at encouraging their children rather than participating actively in their work on Roadmaps. Moreover, when talking with teachers, the latter mentioned that parents' participation in Roadmaps is usually limited to indirect forms of involvement, which include discussing matters related to their children with teachers and discussing the development of their children from time to time. At the same time, even during those discussions, parents do not influence their child's goals or the actions that are proposed to be undertaken to achieve them.

5.6 Challenges in Creating and Using Roadmaps

Despite the positive perceptions held by participants concerning the usefulness of Roadmaps as a learning tool, some issues were cited by participants regarding the creation and sustenance of the Roadmaps. These issues range from the problem of setting out specific goals, the confusion regarding the parts of the Roadmap, to technological issues that hampered their ability to access the Roadmap. The most commonly cited issue among students is that of:

"The biggest challenge is deciding on specific goals. It can be difficult to clearly define what we want to achieve." (Student 2)

Students also shared confusion about the structure of the Roadmap itself, particularly the difference between action plans and indicators of success.

"…. challenge is understanding the difference between action plans and indicators of success. Sometimes our indicators of success are unrealistic. Another challenge is understanding the difference between skills, processes, and watermarks, which are sections of the Roadmap. Many students are unsure what to write in each section, so they sometimes fill them in randomly." (Student 1)

Teachers confirmed that this confusion is common among students. One teacher acknowledged that distinguishing between the components of a Roadmap is also difficult for teachers:

"differentiating between action plans and indicators of success. Sometimes even I struggle with that. When that happens, I discuss it with my colleagues." (Teacher 1)

Another teacher shared that conceptual understanding of the Roadmap structure is particularly difficult for younger students:

"Right now, students must think about skills, processes, watermarks, and SMART criteria. For many Grades 7 and Grade 8 students, this is difficult to understand." (Teacher 2)

Another issue was the availability of technology during the Roadmap. The students had no access to computers, making it difficult for them to update their progress on the Roadmap. As one student said:

"In our school, students do not always have access to the computer lab, so we are not always able to update the Roadmap." (Student 3)

A teacher added,

“Students also have limited access to computers, usually only on certain days like Saturdays. Because of this, many students feel that writing Roadmaps is similar to completing homework.” (Teacher 2)

Another teacher described how limited access to laptops requires mentors to find other ways to support students:

“We do not have enough laptops in the school- we have only 30. Sometimes there are internet problems as well. So as mentors, we even give our own laptops for students to use.” (Teacher 4)

5.7 Improving the Roadmaps

The suggestions on improving Roadmaps were mostly on improving students’ understanding of the Roadmap, increasing access to technology, and strengthening the role of mentors. Students emphasized the importance of clearer explanations of the Roadmap.

“Teachers should clearly explain what a Roadmap is and how it helps achieve goals before asking students to create one.” (Student 2)

Teachers also emphasized the need for stronger guidance and consistency in the Roadmap process. One teacher explained:

“Students take academic domains seriously because there are exams attached to them. But Roadmaps sometimes feel optional. If roadmaps were given similar importance, students might take them more seriously.” (Teacher 1)

Another teacher emphasized the importance of regular mentor engagement:

“If mentors regularly comment on Roadmaps and acknowledge students’ reflections, students will feel that their effort matters. Without that feedback, students eventually feel that maintaining the Roadmap is pointless.” (Teacher 2)

This shows that there is a need for schools to bring more consistency as far as input from mentors is considered so that students do not see the Roadmaps as a pointless exercise simply because of a lack of support from the mentors.

Participants also suggested that technology could be used to improve the Roadmap process. One student proposed:

“Students could describe what they did, and the AI could automatically update the Roadmap and provide feedback.” (Student 2)

Teachers also saw potential for technology to analyze student progress:

“AI could analyze trends in student data and suggest potential areas for growth.” (Teacher 2)

While teachers and students see the potential for AI and emerging technologies to enrich the process, technology should not be seen as a replacement for the human interactions between the student and the teachers. This shows that there is a need to think about how the importance of human relationships in the process needs to be emphasized to the students.

6. Discussions

This research examined the perceptions of BB schools' students and teachers on the application of Roadmaps, specifically the effects of the application on learning, teachers' involvement, peer relationships, parent participation, and the difficulties associated with design and implementation of Roadmaps. Both students and teachers perceive the application of Roadmaps as an effective approach to fostering learner ownership, reflection, motivation, and holistic growth. Nonetheless, these results do not necessarily occur automatically because they depend on the individual's capacity to make decisions based on prioritization, support systems provided to the students and systemic structures that guarantee standardization among schools. Among other factors, these include the students' conceptualization of Roadmaps, the consistent mentorship and teacher assistance in the creation and utilization of Roadmaps, the capacity of the system to accommodate individual differences, and the schools' approaches to addressing structural factors that affect the procedure. This study validates previous studies on student-centred planning and self-regulated learning.

6.1 Tracking Goals to Taking Ownership

According to literature on the student-led approach to planning, planning aids are useful in ensuring that students are able to set goals, plan and organize their activities, and take active roles in the learning process (Pintrich, 2000; Zimmerman, 2002; Berger et al., 2014; Tang et al., 2024). In this case, planning is viewed not only as a means to develop an effective schedule but also as an important aspect of intentional learning. Intentional learning involves goal setting, selection of approaches, and progress monitoring among other aspects of planning. Student saw Roadmaps as useful in providing direction, and structure to their learning. Students explained that before using Roadmaps, they struggled to figure out what they wanted to achieve and how to define their goals. Roadmap helped them focus and organize and track their goals. Students

saw the value of Roadmaps as a practical tool for planning. Teachers emphasized that mentors need to help students understand what they actually mean when they write something in their Roadmap and that students should be their own assessors and reflect on their learning.

Studies often present student-led planning as if students immediately recognize its value. The present study finds that process by which students understand the value and purpose of student-led planning is more gradual than immediate. Dalland and Klette (2016), Oller et al. (2021) and Tang et al. (2024) argues that students do not instantly develop ownership simply because planning opportunities exist. Rather, the value of the process develops over time through repeated use, reflection, and guided reflection. In the context of the BB schools, this means that Roadmaps may serve as the first part of giving students choice and ownership of learning, but schools cannot assume that students automatically understand or experience them in the way the BB sees them without more structure support. The relevance and impact of the Roadmap lie partly in its ability to move students gradually from task management toward ownership and responsibility of learning.

In addition, schools and teachers, when they are introducing the Roadmaps to the students, should also communicate that the process takes time, requires effort and persistence. The fact that the initial part of the process is usually a bit challenging till the process is understood should guide the mentoring relations and teachers should help students get through this challenge.

6.2 Conditions that Promote Ownership

Studies have shown that when students are involved in goal setting and planning, there is improvements in ownership, interest, and persistence in learning (Bernacki & Walkington, 2018; Pui, 2016; Tang et al., 2024; Jones, 2019). Student-led planning leads improves motivation when students see goals as meaningful and when they can connect tasks to their own

interests. In the context of Roadmaps, students frequently described how creating goals help them enhance responsibility and commitment. In addition, students described becoming more aware, focused and mindful about learning when they commit to doing something on their Roadmaps. Students also shared that once they agree to a time with their mentors, it forces them to think about the deadlines instead of waiting for reminders. This reinforces the idea that planning support persistence and self-regulation as it makes students aware of what needs to be done and being able to take ownership. Teachers noted that Roadmaps work well only when students engage seriously with them. Teachers find that students who are able to articulate clear goals in their Roadmaps are able to track their progress well but noticed that many students do not fully understand the value of Roadmaps. In that sense, teachers highlight that there is a mix of students who work on their Roadmaps genuinely while others only do so because they are required. Thus, it is important to note that the link between planning and ownership is not direct. It depends on whether students perceive their Roadmaps as relevant, whether the goals are meaningful to them, and whether the system around them encourages genuine rather than superficial engagement. This is consistent with Dalland and Klette's (2016) finding that planning tools promote self-regulated learning for some students while being treated as routine paperwork by others. Jones (2019) also observe that student-generated learning tasks are used meaningfully when the students were able to determine what they understood and areas that they did not understand.

Roadmaps should not be treated as tools that automatically encourage ownership, choice, and self-awareness simply because students complete them. The Roadmaps seem to work as a process that enable reflections, but how well it impacts learning seems to depend on the way the students and teachers use them. The students said they became more aware of what their priorities were, what their strengths and weaknesses were, and motivated after setting specific

goals for themselves. Some students shared that they hold themselves accountable because their commitments were visible. Other students highlighted that the process helped them break broader goals into manageable steps. Teachers also observed that some students became more reflective, more conscious in their efforts, and more willing to discuss personal growth when Roadmaps were used well.

At the same time, the benefits seem to be affected by the quality of the relationship between students and teachers, specifically mentors that assist students in goal setting, plan making, and maintaining the motivation to succeed. In situations where teachers consistently referred to Roadmaps, engaged in discussions related to reflection on what had been achieved, and recognized any success that may have been made, it seemed as if students utilized their Roadmaps more frequently. However, in those cases where teachers were not very concerned about Roadmaps, students appeared to fill in their Roadmaps without considering the significance of the utilization of Roadmaps.

6.3 Influence of Roadmaps on Motivation

Roadmaps are most effective when they are accompanied by guidance, dialogue, and accountability. Mentors seem to be the single most important influence on students' use of Roadmaps. Students see mentors as the people who help them identify areas for improvement, challenge their goals, remind them, and comment on their progress. This is consistent with the existing literature which also shows that student-led learning is never entirely individual. While it is expected that students own their learning, they do so in a context where the role of teachers, classmates, and parents cannot be discounted (Zimmerman, 2002; Pintrich & Zusho, 2002; Royer, 2017; Marstaller & Amoakoh, 2023). They like being acknowledged by their mentors for completing a task or adding a reflection to their Roadmaps. Some of the students also reflect

that the conversations with their mentors help them break down their plans into more achievable steps.

Teachers highlight why the interaction with their mentees are important. They do not simply monitor whether students had written something on their Roadmaps. They were actively interpreting goals, seeing whether the goals are measurable, and helping students reflect on the progress. Teachers seem to know what the students put on their Roadmaps which also help them think about what they need to discuss with individual students when they meet. The system of meeting every week with their mentees seem to encourage teachers to look at the progress of each student and think about how they can support the student further. Teachers also take on the role of helping students make goals more realistic and helping them connect one goal across multiple areas. These strategies reinforce Greene and Azevedo's (2007) argument that effective planning requires explicit scaffolding, modelling, and guided practice. It also shows that planning becomes meaningful when embedded within a structured system of feedback and reflection rather than left to students alone (Higgs, 2012).

This also indicates the importance of the quality of the mentor and how consistently the mentors in the school can help the students. It was found that the students begin to view the Roadmaps only as an activity which needs to be completed, once there are no comments from the mentors at regular intervals. While on the other hand, the question arises if all the mentors provide similar levels of support. Apparently, some mentors appear to be much more involved in this process than others. Schools have to make sure that the mentoring is done on a regular basis and the effort made by the students is appreciated by the mentors. This can only be achieved through regular, consistent and visible mentoring. On the other hand, it is equally important for the teacher to be prepared to act as a mentor.

6.4 The Importance of Reflection

Reflection in the Roadmapping process seems to be distributed across multiple spaces and practices. In addition to the digital platform, students also use journals, notepads, school diaries, and mentor-mentee books to reflect on their progress before updating their Roadmaps. Students explained that they keep journal which help them keep track of their progress, especially in areas such as spiritual, emotional and social development where progress is not always visible. Zimmerman (2002) argues that self-reflection is one of the core phases of self-regulation, while Nicol and Macfarlane-Dick (2006) share that effective feedback depend on learners' capacity to evaluate their own progress.

However, students also admitted that depending on memory is not always helpful. The digital platform does not seem to be the only space for reflection. While the space exists, students and teachers note that they do not always get access to computers to write their reflections. Moreover, there seems to be multiple ways that different students and mentors keep their reflections. In order to ensure that these reflections are not lost and used in the updating the Roadmaps, it might be necessary for schools to think about more structured ways of maintaining these reflections outside the digital platform. Reflection can be supported through the use of platforms, prompts, analytics, and visual progress tracking in order to find different ways of helping the students take different perspectives into account (Dabbagh & Kitsantas, 2012; Aviran & Blonder, 2023; Lim et al., 2024).

It appears that there is a significant culture of reflective practice in BB schools. Therefore, it is crucial that this reflective practice is recorded appropriately. This will enable the mentor to consider various methods for motivating the students to reflect upon their learning and then assist the students in updating their Roadmaps.

6.5 Student Readiness and Understanding of Roadmaps

Student-led planning and its impact is seen to vary according to the readiness, maturity, and abilities to self-regulated learning among students (Puustinen & Pulkkinen, 2001; Pintrich & Zusho, 2002; Zimmerman, 2002). In the BB, students and teachers note that there are variations in the way students engage with the Roadmaps. One of the main issues emerge from the understanding of the Roadmap itself. Students as well as teachers share that the components of the Roadmaps were not clear. In most cases, the issues seem to emerge in their ability to differentiate between action plans and indicators of success. In addition, some students struggle with the format of the Roadmap itself, especially if they are new to the BB. Munshi et al. (2023), Tang et al. (2024), and Lim et al. (2024) suggest that learners with weaker planning and monitoring capacities require more structured support for them to be able to take ownership of their planning. This is true in the context of the BB where examples of what a good Roadmap looks like could be useful to help students think about how to create their own Roadmap. A clear distinction between action plan and indicators of success is necessary in order to avoid confusion among the students.

As teachers highlight, when students are not clear about what they want to add as indicator of success, they struggle to keep track of their progress as the benchmarks are not clearly determined. Students coming into the BB system would benefit from an orientation in which they understand the purpose of Roadmaps as well as the process of creating them. At the same time, more structured opportunities may have to be offered to students who have been part of the BB for longer times but are still struggling to create good Roadmaps. In addition, since mentors are the adults who are providing individual support, making sure that all mentors understand the process of creating Roadmaps would be necessary. This would also ensure that any teacher who is assigned to a mentor knows how to provide support to the students in creating their Roadmaps.

6.6 Influence of Peers on Roadmaps

Student-led planning is influenced by how students understand, value, and engage with learning (Zimmerman, 2002; Royer, 2017; Marstaller & Amoakoh, 2023). As the students interact with their peers, they also learn the process or help their peers refine their plans. While students and teachers recognize that peers are influential in the Roadmap process, the nature of that influence appears somewhat more indirect than some of the literature highlights. Students did not always report having explicit conversations about Roadmaps with their peers. Instead, they described how discussions about life, shared problems, social behaviours, goals, and what others were doing influenced how they later thought about their own Roadmaps. In general, students recognize that their Roadmap is influence by their friends because the kind of person they become depends a lot on their interactions with their friends. However, there does not seem to be a structured process in which the peers influence the Roadmaps. While teachers noted that there is strong peer influence, incidences of influence seem to be more indirect. For example, students learn about Roadmaps through examples set by other students. In some schools, there seems to be more structured opportunities for new students to be attached to senior ones while they work on their Roadmaps. These practices are isolated across the schools and does not appear as a consistent approach adopted by all BB schools. While teachers noted that it is generally useful for younger students to follow the examples of well-structured Roadmaps created by older students, they were not sure why this is not done consistently across the mentor groups.

It appears that the students have been affected by peer influence, examples, and conversations even without explicitly sitting down together to create their own personal Roadmap. This means that the school should make use of such informal influence by providing more forums where students can share their successes. Some students, who struggled with what observable goals

should look like in their Roadmaps, expressed the need for seeing examples of what successful indicators of success by other students look like so that they can draw inspiration from them. At the school level, regular opportunities where teachers choose students who seem to create good Roadmaps are given the opportunity to share about their process or conduct workshops on Roadmapping for other students might be useful. This could also be seen as an incentive to dedicate more time and effort on their Roadmaps.

6.7 Indirect Involvement of Parents

Parents are seen to help sustain effort, reinforce routines, and support accountability outside the classroom. However, parental involvement in the Roadmap seems to be limited. In student led planning, parents are seen as important supporters especially when they provide encouragement rather than direct control (Royer, 2017; Gonzalez-DeHass, 2019; Willems & Gonzalez-DeHass, 2024). In general, students and teachers shared that parents are not directly involved in the process of creating Roadmaps. Teachers shared that parents get to know about Roadmaps through reports that are sent by the mentors but are not directly involved in goalsetting and tracking.

However, in some schools, parent and teacher meetings are used a space for the school to discuss the student Roadmaps with the parents. Some schools also have a formalized process where they gather what the parents think should go into a child's Roadmap and the mentor ensures that the student incorporates it into the Roadmap. However, a common understanding on the direct role of parents does not exists across the BB schools. In the context of this study, the fact that parents are not directly involved may not be because parents do not care, but because the BB is still a new system and parents do not have much information about how the BB works. In this case, it might be crucial to give parents an understanding of what Roadmap

mean and why they are important so that the student gets support from the school as well as home. More importantly, this will ensure that the expectations are consistent between home and the school.

6.8 Enablers of Roadmap in Schools

The effectiveness of Roadmaps needs to be understood within wider institutional and systemic conditions in which they operate. Literature highlights curriculum pressure, teacher workload, access to resources, and focus of assessments are major challenges that hinder the implementation of student-led planning in schools (Nicol & Macfarlane-Dick, 2006; Mikroyannidis et al., 2014; Basham et al., 2016; Schunk & DiBenedetto, 2021). In the BB, structural challenges occur in the form of access to technology as well as systemic recognition of the role of Roadmaps. Students did not always have access to computers, and teachers described working around lack of laptops and unstable internet. Access affect whether reflection can be captured when it is fresh, whether students can maintain continuity in the planning process, and whether the Roadmap feels like a living tool or a delayed reporting system. While the students and teachers seem to have found multiple ways of ensuring that the students are constantly reflecting on progress without access to technology, schools need to think about meaningful ways to ensure that students get access to technology on a regular basis to continue updating their Roadmaps. In addition, as most students and teachers highlighted, the use of Roadmaps to initiate conversations around growth, reflecting on progress and sharing of evidence might reinforce the importance of Roadmaps as a tool and not something that is only used for recordkeeping.

Beyond access, tensions around what schools, parents or education systems assesses influences how students and teachers value Roadmaps. Teachers noted that students mostly treat academics more seriously because exams are attached to them, whereas Roadmaps become

optional. This is supported by Nicol and Macfarlane-Dick (2006), Hattie and Timperley (2007) and Schunk and DiBenedetto (2021), who found that students tend to invest effort in what assessment systems signal as important. It also appears that the BB is still navigating a wider education system that prioritizes standardized outcomes and view student success based on examination scores. The documents on BB highlights that doing well in exams should be considered only a small part of the process of learning, and the BB schools seem to also emphasize that progress based on Roadmap is taken into account. While schools encourage students to reflect, plan, and grow across multiple areas, but the need for students to do well in academic alone undermines the value of Roadmaps. As highlighted earlier, while there is a shift in the education policies to account for holistic growth and development of skills (Ministry of Education, 2014). However, the larger nation-wide assessment systems prioritize examination scores, and performance of BB schools are compared with other schools. This means that while, Roadmaps were valued by mentors and students the risk of it being ignored compared to examinable academic work is quite high. This has implications on student attention and effort towards being active participants in their own learning as well as how parents and schools consider what is successful. It might be necessary to bring more alignment between how the policies are enacted and how systems within are schools are seen to contribute to these policies.

6.9 Implications for the BB Schools

Roadmaps can be considered concrete examples of the BB's attempt to turn the concept of student-led planning into practice in the school context. The students are teachers explained how Roadmaps assist students in thinking about their achievements and what they should focus on as well as in increasing self-awareness about areas that require improvement. This is consistent with the self-regulated learning literature, which states that planning, monitoring, and reflection allow students to gain greater self-awareness regarding how they undertake

learning tasks (Zimmerman, 2002; Nicol & Macfarlane-Dick, 2006). Nonetheless, Roadmaps' usefulness will be contingent on several considerations, including students' readiness for reflection, mentoring, the meaning behind Roadmaps, and the existence of school practices that value student-led planning as an important aspect of student development.

An important implication for schools is that Roadmaps are most effective when they are not treated as an isolated system but as part of a system that values reflection, conversation, and continuous monitoring of progress. One of the key elements that is currently not influencing the Roadmaps as much as they are required to do, are the subject teachers. The role of Roadmaps in learning subject related concepts needs to be consciously integrated into the process so that students see the value of Roadmaps in learning academic content as well. Greene & Azvedo (2007) indicate that planning tools become meaningful when they are embedded in regular reflective routines and supported by guidance from teachers or mentors. BB schools may benefit from making Roadmaps an integral part of mentoring, reviews, and classroom discussions as well as parent-teacher meetings. When mentors regularly discuss Roadmaps with students and use them to have conversations, the planning process becomes a part of the learning experience rather than an administrative requirement. In addition, finding ways of ensuring that all mentors provide a consistent level of support for the students across the schools is also important as the levels of engagement from the mentors seem to differ at the moment.

There also needs to be more support provided at school for students who are learning about creating Roadmaps. The feedback from both students and teachers indicates that knowing how to develop effective goals or reflections is a process which requires time and practice. These observations agree with research conducted on self-regulated learning. Specifically, self-regulation skills require instruction and ample practice to develop (Pintrich, 2000; Zimmerman, 2002). Schools should take into account gradual introduction of Roadmaps, particularly in the

earlier grades of the BB. Younger students can use less complex Roadmaps focusing only on few goals or reflections. Moreover, presenting samples of successful Roadmaps and modelling from teachers and students about goal setting and reflections should be provided as well. As students learn from each other through various examples, discussions and modelling, schools may help develop students' abilities by organizing mentoring activities related to Roadmaps among students. When students have the opportunity to observe how their peers develop goals, think about their own learning processes, and articulate how they progressed, they will be able to understand requirements better. Student-led workshops or sharing of examples could help others understand the process and make the process more visible.

In addition, a more structured process of ensuring parental involvement in the student's Roadmap needs to be thought about. At the moment, most of the parents have limited awareness regarding the Roadmaps, their purpose and use in helping the students' learning journey. Awareness on the Roadmaps would give the parents an opportunity to understand its purpose and values and find ways of providing support to the students. When the parents understand about Roadmaps, they might value the ways in which Roadmaps are helping the holistic growth of their children rather than placing value on the academic performance alone. While students consistently highlighted that their parents may not be able to engage directly with the Roadmaps, the role of mentors in gathering inputs regarding parental aspirations and trying to incorporate them into a student's Roadmap is critical. While the direct involvement of parents in the process may not be necessary, the extent to which their inputs should be gathered and the expectations regarding their involvement must be clearly communicated. This ensures that the school, students and parents have a shared understanding of how parents can get involved in the process.

Furthermore, enhancing the infrastructure of technology for the Roadmap would be another essential step. Accessing technology and using the digital tool were mentioned by participants to be problematic in this case. Enhancing access to the digital tool could make it possible for students to reflect and share their reflections in relation to their experiences right after those experiences happen. As for the literature review on the topic of personalized learning environments, digital tools have been found to facilitate students' reflection through tracking progress, visualization of goals, and processing feedback (Dabbagh & Kitsantas, 2012; Tang et al., 2024). Therefore, schools need to examine how digital tools, including artificial intelligence technologies, can assist students in reflecting and organizing their thoughts or setting new goals based on their reports.

Just technology advancements in themselves are not sufficient to ensure proper utilization of Roadmaps. It would also be important to make such decisions keeping in mind the possibility that too much dependence on the use of artificial intelligence may make the Roadmaps a mere to-do list which may harmfully affect the interactions between the students and their teachers. Students and teachers have both agreed that the greatest strength of the Roadmaps comes from active involvement of the mentors with the same. The role played by mentors through giving feedback, discussions on how well a student is progressing, and appreciation of his/her effort at planning helps him/her realize that the Roadmaps are an important part of the school environment. It is also in agreement with what has been suggested in literature on formative assessment where the most effective role played by feedback lies in helping students evaluate their own performance (Nicol & Macfarlane-Dick, 2006).

In addition, creating more visible opportunities for students to learn from one another's experiences with Roadmaps could enhance peer influence and enable students to learn from each other. Some participants suggested that hearing from peers who had used Roadmaps

successfully helped them better understand how the process could support their own learning. This suggests that peer sharing, and collaborative reflection could strengthen the implementation of Roadmaps. The school could organize forums where students present how they have utilized the Roadmaps in planning projects, solving problems, and assessing their development. The process ensures that small achievements are recognized during the journey while at the same time allowing all participants to witness the progress made, which would otherwise take time within the long process. Research on collaborative learning environments suggests that such peer exchanges can strengthen reflective practices by exposing students to different approaches to learning and goal setting (Konrad, 2008; Tang et al., 2024).

Teacher preparedness to engage with Roadmaps themselves as well as mentor students is an area that requires consistent guidance. Teachers who experience the impact of Roadmaps themselves are more likely to encourage students to work on their Roadmaps more diligently. Participants, especially the teachers, highlighted the need for regular support in understanding the Roadmapping process as well as guides that could support students in creating their Roadmaps. These guides would also help clarify the confusion about different components of the Roadmap if examples are also provided to give students a clearer picture of the expectations. At the same time, the guides complement rather than undermine the relationship between the students and teachers.

7. Limitations and Areas for Future Research

This study explored the role of Roadmaps in shaping students' learning process in the BB schools. However, the research was conducted using a relatively small sample of students and teachers in BB schools. Even though the results gained through interviews provide rich insights into the experiences of students and teachers, they may not always generalize the practices of all BB schools. All schools are different in the resources they may possess, the quality of mentoring, technological infrastructure, and culture. Thus, the way Roadmaps work may vary depending on the particular conditions of a school. For example, there are schools where communication with parents is more formalized than in others. In some schools, that relation is only based on the interactions between parents and mentors. Future research should include more schools from various parts of the country.

Interviews were the main source of data in this research. Interviews allowed respondents to share their thoughts on the issues surrounding their experiences, perceptions, and difficulties regarding the use of Roadmaps. Nevertheless, interviews are prone to biases that result from respondents' capacity to recall and interpret their experiences and possible influence by their own perception of the researchers' expectations. Moreover, interviews collect perceptions, not concrete evidence of how Roadmaps are implemented in real-world scenarios. Mentoring meetings, classroom observations, and students' engagement in the Roadmap process can offer a more comprehensive account of how the Roadmapping process unfolds. Analyzing students' Roadmaps or changes in the Roadmap process can also help understand the process of students' goal setting, reflection, and action plan implementation.

Only the views of students and teachers were considered in this study. Other people such as parents, school leaders, and policymakers also influence the operation of Roadmaps in the

larger system. Despite recognizing a lack of parental engagement in Roadmaps, the study does not address the parents' views and experiences. Further research may explore parents' views on Roadmaps. This could look at what they think about their role in helping their children achieve their goals, and what kind of communication may serve to better connect school and home.

Taking these limitations into account, some suggestions for future studies on this concept are to examine how Roadmaps are implemented across different BB schools. This could take a comparative approach and explore how variations in school culture, mentoring, access to technology, and leadership support impact the Roadmaps. Comparative studies could also examine how students in different grade levels experience Roadmaps, particularly whether younger students require different forms of support compared to older students. Another area of future research could examine how students' engagement with Roadmaps develops over time. Several teachers in this study suggested that students gradually develop a better understanding of Roadmaps as they gain more experience with it. Longitudinal studies could track students across multiple years to examine how their ability to set goals, reflect on their learning, and their ability to take ownership changes over time. This could provide insights into how Roadmaps contribute to the development of students' sense of ownership over the long term.

Teachers and students also indicated the possibilities of AI and technology tools playing a more important role in the process of tracking and updating Roadmaps. In this sense, future studies could explore the role of digital tools and AI in supporting the Roadmapping process. Some participants also proposed the possibility of using AI-support to help students summarize reflections, track progress, or suggest potential goals. Understanding how digital technologies

could support reflection, feedback, and monitoring of progress might offer useful directions for improving the usability and effectiveness of Roadmaps.

Teachers shared that students often prioritize learning which were directly linked to examinations. This influences how seriously students engage with Roadmaps. Exploring how Roadmaps might be better integrated with assessment practices or reporting systems could help strengthen their role in supporting meaningful learning. This would also contribute to broader discussions about how student-led planning tools can complement academic performance within educational systems undergoing reforms.

8. Conclusion

This study explored how students and teachers experience the use of Roadmaps within the BB and to understand how this tool influences students' learning processes, motivation, reflection, and personal growth. The findings indicate that Roadmaps have the potential to play a meaningful role in supporting student-led planning as well development self-regulation in students.

From the point of view of the students, Roadmaps were seen as effective means which could help them arrange their goals, concentrate on what needs to be done, and measure progress in various spheres of development. Students admitted that making notes about their goals helped them commit to reaching those goals and concentrate on their realization. Thus, students gained more understanding regarding their strong and weak points and possible improvements to be made. The conclusion that one may draw from this experience is that following Roadmaps allows developing important qualities including responsibility, perseverance, and self-awareness.

Teachers, on the other hand, emphasized the broader purpose of Roadmaps. For teachers, Roadmaps were not only tools for organizing goals but also mechanisms for helping students develop skills such as reflection and ability to conduct self-assessment. Teachers described how the Roadmapping process allowed them to better understand their students' aspirations and challenges. This helped them provide more specific guidance and support to the students. While Roadmaps are designed to promote a sense of ownership by the students, their effectiveness is closely linked to the support provided by mentors and teachers.

The mentors play a key role in guiding students' engagement with Roadmaps. Mentor guidance, feedback, and encouragement were consistently identified as key factors influencing whether

students used Roadmaps meaningfully. When mentors regularly discussed Roadmaps with students, asked reflective questions, and acknowledged students' efforts, students were more likely to view the process as valuable and relevant. Building supportive relations in a learner-centred approach is essential for schools. Support structures are used as scaffolding to help students learn how to regulate themselves. In contrast to being a stand-alone planning tool, the Roadmaps seem to be most effective when integrated into dialogues about learning between students and their mentors.

At the same time, students reported difficulties in clearly defining goals and understanding certain components of the Roadmap. Teachers highlighted variations in student engagement and the need for consistent mentor support. Restricted access to computers and internet connectivity, also affected students' ability to regularly update their Roadmaps. Notably, the effectiveness of Roadmaps does not only depend on the nature of the tool but also on the conditions existing in schools as a system.

Nonetheless, the study indicates that the use of Roadmaps promotes reflection by students in terms of their learning experiences, goal setting, and monitoring progress. Consequently, students can develop self-regulation skills that make them take charge of their learning process actively. In combination with mentoring and enabling a reflective culture in schools, Roadmaps can make a great contribution to students' autonomy and engagement with learning.

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10. Appendix

10.1 Appendix 1: Sample Interview Questions

1. Student Interview Questions

Influence of Roadmaps on Learning Processes

1. Can you describe the role that the Roadmap plays in your learning journey ? (follow up: how you use your)
2. In what ways has creating and using your Roadmap affected you in setting goals and planning your learning? (follow up if needed)
3. Do you feel that learning with the Roadmap has changed engagement or motivation compared to before? Why or why not? (follow up if needed)
4. How do you decide what goes into your Roadmap?

Role of Teachers, Parents, and Peers

1. What kind of support or feedback do you receive for working on your Roadmap?
2.) How do your parents contribute to your Roadmap process? Can you give an example?
3. How do peers influence or support you in your Roadmap journey?
4. From those that you mentioned (e.g. teachers, parents, peers and others), whose support has been most important for you. Why?
5. How do you create group Roadmaps?

Challenges

1. What challenges do you face when creating your Roadmap?
2. What challenges do you face when using your Roadmap as a guide to learning?
3. How do these challenges affect your motivation or ability to learn effectively?
4. Do you have any suggestions to improve the Roadmap process for students?

2. Teachers

Influence of Roadmaps on Students' Learning

1. How have Roadmaps influenced your students' approach to learning? Can you give some concrete examples
2. Have you observed changes in students' goal setting, reflection, or ownership of learning since Roadmaps were introduced?

3. In your experience, how do students perceive and understand the purpose of Roadmaps? (follow up: does that match with how you see its function)

Role of Teachers, Parents, and Peers

1. What role do you play in guiding students during the Roadmap creation and review process?
2. Do you also collaborate with parents in supporting students' Roadmaps? (follow up: how & is that how you would ideally envision it?)
3. From your perspective, what role do peers play in helping each other through the Roadmap process? (follow up: how & is that how you would ideally envision it?))
4. Do you feel that students take real ownership of their Roadmaps? Why or why not?

Challenges

1. What challenges do you notice students face when creating and using Roadmaps?
2. What challenges do you, as a teacher, face in facilitating the Roadmap process?
3. In your view, how do these challenges affect student engagement and learning outcomes?
4. What improvements would you suggest in making the Roadmap process more effective?

10.2 Appendix 2: Examples from the Coding Scheme

Theme	Codes	Description	Quotes
Understanding the Purpose of Roadmaps	Goal setting	Roadmaps are described as tools for identifying and setting goals.	"….for me, a roadmap is a set of goals that I set for myself. It helps me focus on what I really want to do." (S2) "ummm…when students write down a goal, it gives them a sense of ownership and responsibility." (T2)
	Planning and organization	organize tasks and prioritize activities. Used to provide reminders	"The roadmap helps me manage both my Fab Academy learning and my schoolwork." (S2) "……..in addition, it helps us identify what matters most and focus on that." (S3) "sometimes, …..if they (students) create meaningful roadmaps with clear goals and action plans, it becomes very helpful." (T2)
Impact on Learning and Development	Motivation	increase motivation and commitment as goals are added. Describes accountability	"When you write down a goal……, you commit to it.. and you feel accountable for achieving it." (S6) "……there is a small voice in my mind reminding me that I committed to this goal." (S6)

			"Because the goal is written in the roadmap, it becomes a reference point for discussion….." (T2)
	Focus and organization	focus and intention in their learning. Also indicates the presence of a conscious effort.	"……once I am creating roadmaps and defining goals, I became more focused and organized." (S2) "Roadmaps break big goals into smaller steps that are easier to follow." (S6) "Students begin deliberately putting effort into improving their learning." (T1)
	Personal growth	Roadmaps contribute to personal growth and development. Evidence of growth.	"Last year my goal was to raise my confidence level……ummm.. and I achieved about 85% of it." (S3) "After coming here (in the school) …. I became more confident and better at socializing." (S4) "it impacts others…..a girl in my mentor group was very quiet at first but later she started talking to others more confidently." (T4)