Autonomous and controlled motivational behaviour and student academic outcomes in upper primary school in a remote setting

Abstract

This research study was aimed to study the effect of**autonomous and controlled motivational behaviour and student academic outcomes in upper primary school in a remote setting** on learning.This cross-sectional survey was conducted to determine the extent to which autonomous and controlled forms of motivation were prevalent in upper-primary school students. Data was collected through the administration of Academic Self-Regulation Questionnaire from 265 students in upper-primary school in Mongar district of Bhutan. Based on the descriptive and inferential analysis, it was found that the controlled forms of motivation resulting from external and introjected regulations are negatively associated with academic achievement. Autonomous forms of motivation, mainly resulting from identified regulation were positively related to academic outcomes, while surprisingly intrinsic motivation was negatively associated with academic outcomes. Although identified regulation broadly falls under controlled form of motivation, the locus of control is internal and thus is autonomous in nature. The results indicate that the majority of the students conform to identified regulation. Recommendation for aligning teaching practices and assessment policy is made.

Key Words: Motivation, self-determination theory, behaviour, locus of control, autonomous and controlled regulation, relationships.

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Introduction

Motivation is the process that initiates, guides, and sustains goal-oriented behavior and involves the biological, emotional, social, and cognitive forces that activate behavior. In education, motivation has one of the most profound influences on academic outcome of the students. Thus, it is rigorously researched and many models of motivation exists. For example, expectancy-value theory (Eccles-Parsons et al., 1983) views motivation as a process in which an individual's motivation is influenced by the expectation of the future and the achievement task value. Expectation in the context of the theory refers to the decision that a person makes regarding their ability to successfully complete the task. This is similar to the concept of locus of control (Rotter, 1966) and self-efficacy (Bandura, 1977). Locus of control can be categorized into internal and external. Individuals with internal locus of control believe that they have control over the events that influence their lives, while individuals with external locus of control feel that they do not have any control over any of the events that influence their lives. Individuals with internal locus of control are generally intrinsically motivated (Rotter, 1966). Self-efficacy is the belief in one's abilities and skills to perform a task or a behaviour (Bandura, 1979).

Deci and Ryan (1985) offer self-determination theory (SDT) of motivation. SDT is based on the premise that all individuals have the fundamental psychological needs of competence, autonomy, and relatedness. The realization of these basic needs lead to autonomous motivation, and when the needs are compromised the resulting motivation is controlled (Deci & Ryan, 1985; 2012). According to the tenets of SDT, motivation is as a result of five regulatory forces experienced through external and internal factors and the degree of internalization that has taken place. If the regulation is internal then the subsequent motivation experienced is classified as intrinsic motivation or autonomous. Extrinsic motivation is of four types depending on regulation; external, introjected, identified, and integrated regulation. According to Deci and

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Ryan (2012) and Vallerand et al. (2008), one of the key postulates of STD is that motivation varies and the most self-determined forms of motivation produce most adaptive outcomes. Thus, it is important to understand motivation, the quality of motivation, that is the presence or absence of self-determined types of motivation such as intrinsic motivation, integrated and identified regulations rather than focusing on the quantity of motivation.

Research Problem

A search of literature on the internet about "autonomous and controlled motivation" or "self-determined motivation" in the Bhutanese educational context does not yield any hits. This indicates that there is a dearth of such research conducted in the Bhutanese context. While there is a concern about the perceived decline in the quality of academic achievements, and knowing that motivation is a key construct that influence behaviour, it is surprising that little or no research has been conducted to understand the motivational construct of students, let alone autonomous and controlled motivation which drives human behaviour.

Furthermore, because school motivation is regarded by psychologists, teachers, and parents as a critical component of academic performance, it seems appropriate to examine the relationship between educational outcomes and various types of motivation using SDT. For example, autonomously regulated students' motivation (via intrinsic and identified regulations) promotes a variety of positive school outcomes, including improved academic performance, the use of deep study strategies, greater school persistence intentions, lower study exhaustion, and better academic adjustment. Students who are autonomously governed are also healthier, more involved in the learning process, and have higher levels of educational satisfaction, self-esteem, and energy(Howard et al., 2021). On the contrary, controlled student motivational behaviour (via the external and introjected regulations) are generally presumed to have negative consequences on academic achievement although it is debatable (Grolnick et al., 2002). For example, for the fear of being punished (external regulation) and subsequently being abashed (introjected regulation) a student may complete his/her homework on time, which is a positive outcome since homework is assessed and graded in the Bhutanese educational context. Gomes et al. (2019) assert that given the small number of research conducted on controlled motivation and academic outcomes with primary school students, more research is required. Thus, it appears that while

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there is no literature available in the Bhutanese context, literature is scarce even in the international context with primary school students, indicating the need to conduct further research.

Research Question

This research with the upper primary school students in a remote setting was guided by the following questions and sub-questions;

Main research question

To what extent do the motivation of upper primary school student in remote setting conform to autonomous and controlled regulated motivation and academic achievement?

Sub questions

1. How does the self-determination motivation relate to students' academic achievement measured through examination marks?

2.What are the correlation coefficients of the different levels of academic regulation?

Literature Review

Motivation

According to the postulates of Self-Determined Theory (STD), the type of motivation an individual has is as a result of the degree of internalization that has taken place (Deci & Ryan, 1985; 2012). Based on the degree of internalization that has occurred, motivation is broadly categorized into five-different types under extrinsic and intrinsic motivation. More importantly, the classification of motivation into controlled and autonomous form of motivation or non-self-determined and self-determined form of motivation is of relevance to this research. The different types of motivation as a result of the degree of internalization is shown in Figure 1, as a continuum.

According to Legault (2017), SDT is a meta-theory of motivation comprising of six mini-theories. The first mini-theory, cognitive evaluation theory (CET), focuses on the elements that influence perceived autonomy and competence and so shape intrinsic motivation. It is postulated that both internal and external events affect an individual's intrinsic motivation. Intrinsic motivation refers to engagement in activities out of interest or enjoyment rather than for the fear of consequences or the prospect of reward attached to the behaviour (Deci & Ryan, 1985; 2000; 2012). Autonomy is the innate need to feel self-directed whereas competence is the need to feel effective and masterful in the activity being performed. Thus, "when external, social/

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interpersonal, and internal conditions facilitate satisfaction of the individual's needs for autonomy and competence, then intrinsic motivation increases" (Legault, 2017, p. 2). The organismic integration theory (OIT) is the second mini-theory, and it deals with extrinsic motivation and how it can be internalized. OIT postulates that individuals integrate the stimulus from the environment by internalizing, reflecting on, and endorsing the values and behaviour to satisfy their needs for autonomy, competence, and relatedness (Legault, 2017; Ryan & Deci, 1985, 2012, 2020). The degree to which internalization of values and behaviour are critically important for successful performance and persistence (Deci & Ryan, 1985).

Motivation and engagement

Students need to have both the "will" and the "skill" for learning in order to achieve academic excellence (Pintrich&DeGroodt, 1990, p. 38). Learning is a complex process involving the motivational process or the will, and the cognitive processes or the skill, geared towards achieving a set of learning objectives through a series of planned steps and strategies (Pintrich&DeGroodt, 1990). The latter part of gearing towards a set of learning objectives using cognitive processes is also referred to as engagement. According to Reeve (2012), "engagement is a multidimensional construct" (p. 149) involving at-least four intercorrelated aspects; behavioural engagement, emotional engagement, cognitive engagement, and agentic engagement. Assessment of how actively a student is engaged in the learning activity would involve making judgement about student's concentration, attention, and effort (behavioural engagement), the presence of enabling emotions such as interest and the absence of limiting emotions like distress (emotional engagement), the use of learning strategies that bring about conceptual change rather that superficial learning strategies (cognitive engagement), and the extent to which the student tries to enrich the learning experience rather than just passively receiving the information (agentic engagement) as shown in figure 2 (Reeve, 2012).

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Motivation and engagement are inherently linked and influences one another (Reeve, 2012). According to the tenets of SDT (Deci & Ryan, 1985), high-quality motivation is experienced by students who perceive themselves to be acting with a sense of autonomy, competence, and relatedness during the learning activity, whereas low-quality motivation is experienced by students who perceive these three needs to be neglected or frustrated during instruction. Thus, motivation serves as a precursor cause to the observable behavior or engagement and engagement is an observable outcome of motivation. Thus, when students feel a sense of autonomy over their academic tasks, have conducive self-efficacy and a feeling of the topic being learned as an important knowledge, students experience autonomous motivation (Bureau et al., 2022; Ryan & Deci, 2020).

Self-determined motivation, self-regulation, and procrastination

According to the tenets of SDT (Deci & Ryan, 1985), autonomous motivation and some of the controlled forms of motivation, particularly the forms of motivation resulting from identified and integrated regulation, affect self-determination. Students who exhibit characteristics of autonomous, identified and integrated regulated motivation become self-directed learners or self-regulated learners (Deci& Ryan, 2012; Ryan & Deci, 2020). There is a general agreement among scholars that self-regulation is a process in which an individual organizes and manages their thoughts (eg. competency beliefs), emotions (eg. interests), behaviour (eg. persistence), and socio-contextual settings (eg. selecting a quiet and comfortable place to study) to achieve a desired future state (Pintrich, 1995). According to Zimmerman (1990), a common conceptualization of self-regulated learner has emerged as a metacognitively, motivationally, and behaviorally active participant in their own learning. Self-regulated learners plan, establish objectives, organize, self-monitor, and self-evaluate at various moments during

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the acquisition process in terms of metacognitive processes. They can be self-aware, knowledgeable, and decisive in their approach to learning owing to these processes. These students have strong self-efficacy, self-attributions, and intrinsic task interest when it comes to motivational processes (Bureau et al., 2022). They appear to be self-starters who put in remarkable effort and perseverance when learning. Self-regulated learners choose, structure, and build learning environments as part of their behavioral processes. They seek for advice, information, and learning opportunities; they self-instruct throughout acquisition and self-reinforce during performance enactments (Kitsantas et al., 2008). Academic self-regulation refers to students who are independent, self-initiated learners with the ability to use variety of learning strategies to accomplish specific learning goals (Kitsantas et al., 2008).

Burnam et al. (2014) investigated the relationship between university students' self-determined motivation and their procrastination habits. Based on a survey of 393 students, they found out that students who were organized and more self-determined in their motivation were less likely to procrastinate a behaviour and were also more likely to achieve higher academic achievement because of the higher standards that they have set, as a result of self-regulation. Klassen et al.(2008) investigated university students procrastination habits and self-efficacy beliefs about self-regulating their academic behaviour with 495 students. They reported that self-regulated learners have greater self-efficacy beliefs, know how to study, have the meta-cognitive skills to manage and direct available resources to maximize learning. Gaskill and Hoy (2002) found that self-efficacy and self-regulation were interdependent.

Self-determined motivation and academic task persistence

Academic task persistence, or the ability to persevere on an academic task in the face of difficulty over time, has been operationalized as a behavioural commitment to studies (Roland et

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al., 2016). Feather (1962) posits that persistence can also be conceptualized as motivation. Academic task persistence explains why some students complete their assignments despite facing numerous difficulties, while other simply give up (Battle, 1965). Academic persistence is also applied for retention in schools and colleges. Harde and Reeve (2003), tested a motivational model with 483 rural high school students. Their investigation was geared to explain the conditions which influenced rural students' intentions to persist, or to drop out of, high school. They observed that motivation has a significant but an indirect effect on students' intentions to persist. When teachers created a learning environment that conform to autonomy-supportive settings, it significantly affected achievement or competence. They concluded that "as self-determination and competence are enhanced, these motivational resources in turn promote achievement and persistence" (p. 355). It does appear that when students are motivated their perceptions of their own competence are increased, which results in persistence. Persistence, in the context of Harde and Reeve's (2003) research was on retention in school, but it can able be applied to the day-to-day academic activity's students engage in.

Academic task persistence, which is as a result of motivation, is also related to study exhaustion. Deci and Ryan (2008) assert that motivation being a psychological process influences energy or vitality, which he defined as "the energy that is exhilarating and empowering, that allows people to act more autonomously and persist more at important activities" (184). According to SDT (Deci & Ryan, 1985), controlled regulation depletes energy while autonomous regulation which leads to the satisfaction of psychological needs can actually revitalize energy available for self-regulation. De Naeghel et al.(2012) investigated the relationship between elementary students' recreational and academic reading motivation, reading frequency, engagement and comprehension using SDT. They collected data from 1260 fifth

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grade students and their 67 teachers. They reported that recreational autonomous reading motivation was more positively related to reading frequency, engagement, and comprehension, but controlled reading motivation was not significantly related to reading engagement and had a significantly negative relationship with reading comprehension. Academic autonomous and controlled reading motivation were only strongly associated to reading frequency. De Naeghel et al.(2012) reported that "the recreational and academic model accounted for 37% and 33% of the variance in reading comprehension respectively, 11% and 10% of the variance in reading engagement, and 65% and 61% of the variance in reading frequency" (p. 1015). This finding suggests that leisure or recreational autonomous reading, which is autonomously motivated brings about higher gains in reading comprehension, reading engagement, as well as frequency compared to academic reading.

Others have investigated academic persistence as grit in the context of self-regulated learning. Wolters and Hussain (2015) conducted a survey with 213 college students and collected demographic, grit, achievement motivation, strategy use, procrastination and academic performance data in relation to self-regulated learning, a characteristic of autonomously motivated behaviour. Their results suggest that one aspect of grit, perseverance of effort, was a consistent and predictive factor for all the indicators of self-regulated learning, including value, effort, cognitive, metacognitive, motivational, time and study environment management strategies, and procrastination. They also reported that a second aspect of grit, consistency of interest was associated only with time and study environment management strategies, and procrastination. Wolters and Hussain's (2015) study positions grit or perseverance in the context of motivation and self-regulated learning. They also posit that grittier students are less likely to procrastinate, which is often portrayed as a failure of self-regulated learning. Persistence feeds

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achievement which in turn fuels autonomous motivation. In all these findings of relevant literature, it does appear that academic persistence is as a result of the intrinsic or autonomous motivation of the students.

Self-determined motivation and learning strategies

Literature suggests that students who are intrinsically or autonomously motivated appear to learn for the sake of learning and not for immediate gratification. Their motives for learning are long-term and focused more on conceptual change, rather than on the pressures and incentives provided for accomplishing a task (Vansteenskiste et al., 2004). In relation to the self-determination theory, students who learn for the sake of learning are intrinsically or autonomously motivated directed towards the fulfilment of their psychological needs, and their behaviour are voluntary. In the case of the latter, where students perform a task because of external contingencies are said to be controlled by the rewards, recognition, potential punishments. Students' whose behaviour are driven by autonomous motivation are said to employ deep strategies for learning, whereas students whose behaviour are controlled are said to employ superficial strategies for learning. For example, Grolnick and Ryan (1987) conducted an experiment with ninety-one fifth-grade students. The students were grouped into three groups where they were treated differently: Two groups were exposed to directed learning conditions of which one was controlling and the other was non-controlling, and the third group was non-directed learning context. The results of the two groups of directed learning conditions were compared to the non-directed learning conditions. They reported that both the students in the non-directed learning and the non-controlled directed-learning conditions resulted in greater interest and conceptual learning, compared to the controlled directed learning. This they

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concluded was because both non-directed and non-controlled direct-learning environment facilitated the development of autonomy in learning and an internal locus of control.

More recently, Núñez and León (2016) examined the relationship between autonomy support, intrinsic motivation to learn and two motivational consequences, learning and vitality, with 276 undergraduate students in Spain. Their quantitative research was guided by two hypotheses: whether autonomy support is related to vitality, and students' deep learning; and whether intrinsic motivation to learn mediates the associations between autonomy support and vitality, and between autonomy support and deep learning. For the relationship between autonomy support and vitality and deep learning they reported that "students who report that teachers provide autonomy support in classroom, are more likely to learn in a deeper way, connecting new academic content with prior knowledge and to feel positive energy for academic tasks" (p. 5). For the second hypothesis, they reported that an environment that supports autonomy promoted an active learning strategy, and influences students' intrinsic motivation to learn, since such an environment creates a conducive positive energy for learning.

León et al.(2015) attempted to delineate the relationship between autonomy and autonomous motivation which in turn have a positive effect on regulation and deep processing of information with 1412 high school students. The investigation was conducted specifically for mathematics learning. One of the primary goals of education in the twenty-first century is to teach students how to engage in deep processing of knowledge so that they can retain and apply that information or skill in critical, constructive, or adaptive ways. Deep-processing predicts academic success, according to researchers. Leónet al. (2015) found that students who reported greater levels of autonomous motivation also reported engaging in deep-processing on information and critical thinking, although deep-processing of information did not yield

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immediate academic achievement in mathematics. Thus, literature suggests that autonomous forms of motivation are related to students deep-processing of information or conceptual change models of learning.

Self-determined motivation and academic performance

As argued in the earlier sections, students' motivation to study is fundamental to their engagement in learning activities, academic task persistence, self-regulation in learning, avoidance of procrastination, and the use of deep learning strategies. Autonomously motivated students engage in learning because of their personal choice and for the pleasure they derive by engaging in a learning activity (Deci & Ryan 1985, 2012; Ryan & Deci, 2020). Similarly, self-determined students persevere and persist in academic tasks because they value the knowledge and the skills gleaned from performing those assignments. Self-directed learners use deep strategies for learning because the focus of their engagement is on bringing about conceptual change in the way they think and not because they are coerced or pressured to learn something (León et al., 2015).Notwithstanding the behavioural outcomes which emerge as a result of self-directed motivation, the relationship between motivation and academic success is indirect (Manganelli et al., 2019). In fact, research on students aged 19 to 25 years old (Vansteenkiste et al., 2005) found that the favorable impact of autonomous motivation on academic accomplishment is entirely influenced by effective cognitive strategies. This is in line with SRL's theories, which explain motivation's influence on academic achievement as being mediated by learning techniques (Pintrich, 2003).

Students' cognitive strategies are the thought processes they employ to gain understanding, information, and skills. Pintrich (2003) defines cognitive self-regulation as a process in which students select and use various cognitive methods to elaborate, organize, and

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memorize learning material while also controlling their progress in knowledge acquisition. Motivation/affect, behavior, and context are the other three components of self-regulated learning besides cognitive self-regulation. The tactics of information elaboration, organization, rehearsal, critical thinking, and learning monitoring have all been widely considered as necessary for regulating the learning process (Richardson et al 2012). Manganelli et al. (2019) collected data from 764 Italian first year university students to understand the interplay between motivation, cognitive strategies, and prior achievement in predicting university students' academic performance. Three specific research questions guided their research; Does prior achievement influence students' motivation and use of cognitive strategies, in addition to predicting academic performance? What is the relative importance of the various cognitive strategies in predicting students' academic performance? and What are the roles of autonomous and controlled motivation in predicting students' academic performance, both directly and indirectly? Manganelli, et al. (2019) reported that information elaboration, organization, rehearsal, and monitoring did not predict academic performance and that critical thinking was the only cognitive process that had a significant positive impact on academic performance. More importantly, they found out that controlled motivation had a negative direct impact on academic performance, had a positive influence on rehearsal and organization, which are said to be surface level processing techniques, but it had a negative influence on elaboration and critical thinking (i.e. two deep level processing approaches). On the other hand, autonomous motivation had a positive influence on all the five cognitive strategies. The results suggests that autonomously and controlled motivation in students plays important but contrasting role in influencing academic performance.

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As mentioned in the preceding sections, the relationship between academic achievement and forms of motivation based on SDT has not been conducted in the Bhutanese context. This research provides evidences of autonomous and controlled forms of motivation and its relationship to academic achievement. The findings of the research could be used to ground further research.

Method

Among the three research designs proposed by Creswell (2009; 2017), this research was conducted using the principles of quantitative research design. Post-positivists paradigm limits researchers' nature of investigation to experimentation and measurements, whose data are primarily quantitative or numeric in nature (Cohen et al., 2018; Mertens, 2015). Measurement, in the broadest sense, can be categorized into descriptive and explanatory approach (Wilson &Gochyyev, 2013). While descriptive measurement approach aims to accurately measure the underlying variable on which the participants are arranged and draw inferences about the individual or group, it is not the goal of this research. Thus, explanatory measurement approach will be used for this research. "Rather than focusing on the individual, the main purpose is to seek relationships of the observations (response to the items) to other variables" (Wilson &Gochyyev, 2013, p. 6). The purpose of this research was to determine the relationship between personal student characteristics to the type of motivation they have and academic performance. Explanatory measurement approach can help in predicting behaviour in the future and support the development and validation of a theory.

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The Academic Self-Regulated Questionnaire (SRQ-A) was developed by Ryan and Connell in 1989 to measure the reasons why children do their homework. The SRQ-A was chosen for the research since the questionnaire is specifically designed for students in late primary and middle secondary schools (Ryan & Connell, 1989). SRQ-A (Ryan & Connell, 1989) consists of 32 Likert-type items arranged under four sub-topics, why do I do my homework, why do I do my classwork, why do I try to answer hard questions in class, and why do I try to do well in school? However, the real intent of the questionnaire is to determine the forms of motivation students have towards academics. According to the tenets of Self-Determination Theory ([SDT], Deci & Ryan, 1985), motivation is as a result of five regulatory forces experienced through external and internal factors and the degree of internalization that has taken place. If the regulation is internal then the subsequent motivation experienced is classified as intrinsic motivation or autonomous. Whereas, if the locus of control is external and the degree of internalization is partial, then the form of motivation experienced in extrinsic. There are four types of extrinsic motivation based on regulation; external, introjected, identified, and integrated regulation. While the behaviour resulting from external and introjected regulation are said to be non-autonomous or controlled, while behaviour resulting from identified and integrated regulation along with intrinsic motivation are said to be autonomous or self-determined (Deci & Ryan, 1985). The SRQ-A measures external and introjected (or controlled) and identified and integrated forms of motivation (or intrinsic motivation).

Sampling and Participants

There were 661 class six students in Mongar district in 2022, according to the annual education statistics (Ministry of Education, 2022). Using a confidence level of 95% and a confidence interval of plus/minus 5%, the minimum sample required was found to be 243.Data

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was collected from 265 students studyingin class six from 19 schools in Mongar district of Bhutan. Among the participants, 60.8% were girls, and the students' marks ranged from 30.5% to 98.30%. The fathers of 166 students were farmers, while 207 mothers were farmers.

Results

Why do I do my homework?

Students' reasons for doing their homework were measured through 8 items, which consisted of statements which measured external regulation (items 2 and 6), introjected regulation (items 1 and 4), identified regulation (items 5 and 8), and intrinsic motivation (items 3 and 7), as shown in table 1. The means and standard deviation of the scores suggest that students' do not do their homework because of external regulation (item 2 and 6), since the mean is below 3. On the contrary, results suggests that students have identified the importance of homework and are autonomously motivated to complete their homework. The mean scores for the two items (item 5 and 8) were above 3 and the highest among other items, while simultaneously the standard deviations were the lowest among other items. This indicates that there is less variance in the scores compared to other items. In terms of introjected (item 1 and 4) and intrinsic motivation (items 3 and 7), the results were mixed.

Table 1

Results for why I do my homework?

	Mean	Std. Dev
1. Because I want the teacher to think I'm a good student.	1.76	.923
4. Because I will feel bad about myself if I don't do it.	3.33	.824
2. Because I'll get in trouble if I don't.	2.85	1.004
6. Because that's what I'm supposed to do.	2.81	1.048
5. Because I want to understand the subject.	3.60	.698
8. Because it's important to me to do my homework.	3.79	.616
3. Because it's fun.	2.64	.980

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7. Because I enjoy doing my homework.	3.21	1.023

Why do I do my class work?

Students' reasons for doing their classwork were also probed using 8 items, two each for external (item 9 and 14), introjected (item 10 and 12), identified regulation (item 11 and 16) and intrinsic motivation (item 13 and 15). The mean and standard deviation for the scale is shown in table 2. The means of the external regulation were below 3 for both the items, thus it can be surmised that students are not externally regulated to do their classwork. Students also did not show introjected regulated behaviour in terms of doing their classwork. While the students were intrinsically motivated to do their classwork, their behaviour were as a result of identified regulation, which can also be classified as autonomously motivated behaviour. Students' classwork behaviour was not as a result of controlled regulations but primarily due to autonomous regulations.

Table 2

Means and standard deviation for why students do their classwork

	Mean	Std. Dev
9. So that the teacher won't yell at me.	1.66	.914
14. Because that's the rule.	2.04	.960
10. Because I want the teacher to think I'm a good student.	1.81	.875
12. Because I'll be ashamed of myself if it didn't get done.	2.00	.953
11. Because I want to learn new things.	3.70	.652
16. Because it's important to me to work on my classwork.	3.61	.834
13. Because it's fun.	2.66	1.162
15. Because I enjoy doing my classwork.	2.94	1.153

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Why do I try to answer hard questions in class?

Why do students participate in the class especially with respect to answering difficult questions in the class was explored through 8 items, two each for the four sub-scales. The means and standard deviations for the external regulation (item 20 and 24), introjected regulation (item 17 and 18), identified regulation (item 21 and 23), and intrinsic motivation (item 9 and 22) are shown in table 3. With the means of the external regulation items below 2, results suggest that students are not externally regulated to participate in the class through responding to difficult questions. In a similar manner, introjected regulation does not commensurate students' participation in the classroom activities. Students are also not intrinsically motivated to answer difficult questions posed by their teachers in the classroom. Based on the means of the items, students appear to have identified with the importance of participating in the class through responding to difficult questions.

Table 3

Means and standard deviations for why students try hard questions

	Mean	Std. Dev
20. Because that's what I'm supposed to do.	1.66	.845
24. Because I want the teacher to say nice things about me.	1.48	.746
17. Because I want the other students to think I'm smart.	1.63	.795
18. Because I feel ashamed of myself when I don't try.	1.96	.878
21. To find out if I'm right or wrong.	3.36	.965
23. Because it's important to me to try to answer hard questions in class.	3.78	.735
19. Because I enjoy answering hard questions.	2.79	1.108
22. Because it's fun to answer hard questions.	2.73	1.067

Why do I try to do well in school?

Students' motivation to do well in school was measured using 8-items as well, however the distribution of items for the four subscales of the instrument were not proportionate. External

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regulation was measured using three items (item 25, 28, and 32), introjected regulation was also assessed through three items (item 26, 29, and 31), while identified regulation and intrinsic motivation was assessed through an item each, item 27 and item 30 respectively. The results obtained, table 4, suggests that students are not externally regulated to perform well in school, since the means of the three items measuring external regulation was lower than 3. Results for the introjected regulation were mixed. In a similar manner, the mean for the identified regulation and intrinsic motivation to do well in school was greater than 3, indicating that students knew the importance of doing well in school and have internalized the behaviour to a greater extent and were intrinsically motivated to do well in school.

Table 4

Means and standard deviations for why students try to do well in school

Why do I try to do well in school?	Mean	Std. Dev
25. Because that's what I'm supposed to do.	2.04	1.021
28. Because I will get in trouble if I don't do well.	2.49	1.035
32. Because I might get a reward if I do well.	2.24	1.024
26. So my teachers will think I'm a good student	1.87	1.043
29. Because I'll feel really bad about myself if I don't do well.	3.19	.839
31. Because I will feel really proud of myself if I do well.	3.75	.472
27. Because I enjoy doing my school work well.	3.10	.940
30. Because it's important to me to try to do well in school.	3.78	.623

Types of motivation and variations

To discern the types of motivation, the individual scores of the subscales were computed, and the results obtained are shown in table 5. The questionnaire consisted of a total of nine items each for the external regulation and introjected subscales, while identified and intrinsic motivation was measured through seven items each. From the means and the standard deviations obtained, it can be surmised that students' academic self-regulation is primarily influenced by

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identified regulation, followed by intrinsic motivation, and then by introjected regulation, while the least was through external regulation.

Table 5

Types of motivation for academic achievement

	Mean	Std. Deviation
External	2.20	.418
Introjected	2.36	.483
Identified	3.66	.427
Intrinsic	2.87	.831

Types of motivation and academic achievement

Pearson correlation coefficients were calculated to determine the association between the types of motivation and academic achievement, which was measured through the last examination marks. To do so, the sum of the individual scores for each student was computed to form a composite score for each of the sub-scales. Pearson correlation coefficient determines the strength and direction of the association between variables (Mertens, 2015). The coefficient ranges from -1 to +1. The correlation coefficients of the sub-scales and the examination marks are provided in table 6.

Table 6

Pearson correlation coefficient for assessment marks and types of motivation

		Assessment marks	Ext_sum	Intro_sum	Iden_sum	Intrin_sum
Assessment marks	Pearson r	1				
	Sig. (2-tailed)					
Ext_sum	Pearson r	-.177	1			
	Sig. (2-tailed)	.151				
Intro_sum	Pearson r	-.218	.607**	1		
	Sig. (2-tailed)	.076	.000			
Iden_sum	Pearson r	.230	-.173	-.082	1	
	Sig. (2-tailed)	.062	.162	.508		

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Intrin_sum	Pearson r	-.014	.071	.350**	.239	1
	Sig. (2-tailed)	.908	.566	.004	.052	

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficients between academic achievement and externally regulated, introjected regulation, and intrinsic motivation was obtained to be weak and negative. This indicate that the academic achievement and external, introjected regulation, and intrinsic motivation are negatively associated, and that increase in the scores in these three subscales would decrease the academic achievement. The result is surprising, since intrinsic motivation have been associated with increased academic performance of the students. Identified regulation on the other hand, showed weak positive relationship with academic achievement, suggesting that the more students are motivated through identified regulation, the better the student academic outcomes are. In summary, controlled forms of motivation resulting from external and introjected regulations are negatively associated with academic achievement. Autonomous forms of motivation, and particularly resulting from identified regulation were positively associated with academic outcomes, while surprisingly intrinsic motivation was negatively associated with academic outcomes.

Findings

The results of this research suggests that students' academic behaviour predominantly conforms to identified regulation. The mean obtained for identified regulation was the highest among other forms of autonomous and controlled forms of motivation. Identified regulation is characterized by an individual consciously identifying with or endorsing the value of an activity and thus experiencing greater volitional or the willingness to act (Ryan & Deci, 2020). Students

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recognized the value of doing home-work, class work, and participating in the class, and hence were autonomously motivated.

The correlation coefficients indicate that external regulation, introjected regulation, and intrinsic motivation were negatively correlated with academic achievement, although the relationships were not significant. On the contrary, identified regulation showed weak positive correlation with academic achievement, when measured through examination marks. Although students were not intrinsically motivated, identified regulation which is a form of autonomous motivation were determined to have a positive influence on student achievement.

Discussions

Research has demonstrated that self-regulated learning, which originates from autonomous forms of motivation greatly predicts the differences in the students' academic achievement (Donker et al., 2014; Kistner et al., 2010; Mega et al., 2014; Schneider & Preckel 2017). Students who use more self-regulated learning (SRL) strategies, make more effort, and persist longer when faced with difficulties, resulting in better academic achievement (Kim et al.,2015; Pajares, 2003; Schunk & Zimmerman, 2007; Yusoff, 2012). The results of this study indicate that students are not extrinsically motivated to do well in academics, when measured through external and introjected regulation. Even at a younger age, students do not conform to external and introjected regulation which means that students are not driven by either reward or punishments. Students in this study conform more towards identified regulation which means that students have realized the importance of academic tasks whether it be classwork, homework, or participating in classroom discussions, although they are not intrinsically motivated to perform well. This is an encouraging trend, despite the claims that children at the early age are

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unable to advance to a higher level of self-regulated learning (Boekaerts, 1997; Desoete, 2008; Schneider, 2008).

Students identifying with the importance of doing their homework, classwork, and actively participating in the classroom discussions may be because of the assessment policies. Classwork, homework, and classroom participation are assessed and graded, which bears some marks in student assessment (Royal Education Council, 2019). Perhaps, it is because of the assessment policies that students do their work and participate in classroom activities. Notwithstanding the continuous assessment marks, students identifying with the importance of these tasks also suggests that students would perform their tasks if adequate assessment strategies are put in place. For example, if students conform to identified regulation because of assessment policies, students could also be graded for creative and innovative thinking, solving real world problems, and coming up with thought provoking questions, which would demand out-of-the-box thinking.

Previous research also shows that students, particularly at a young age, encounter difficulties when they try to effectively regulate their learning and that large differences occur between learners (Perry et al., 2004; Winne, 2005; Zimmerman, 2002). This is partly because observational studies have shown that teachers hardly implement self-regulated learning, which is as a result of autonomous regulation, in the classrooms (Kistner et al., 2010; Perry et al., 2004). Research has demonstrated that classroom environments that facilitates autonomy in learning promoted an active learning strategy, and influences students' intrinsic motivation to learn, since such an environment creates a conducive positive energy for learning (Grolnick& Ryan, 1987; Núñez & León, 2016).

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Conclusion

This research was about autonomous and controlled forms of motivation among upper primary school students towards academic tasks. Deci and Ryan's (1985) continuum of regulation were used to measure student motivation towards completing their homework, classwork, and participation in classroom activities. External regulation and introjected regulation, which are forms of external regulation and constitute extrinsic motivation were minimum. This indicated that students do not do their homework, classwork, or participate in classroom activities because of extrinsic motivation and hence their behaviour are not controlled. Identified regulation was predominant among the participants. Students' academic behaviour was mostly driven because of identified regulation, which indicates that students value the importance of doing their homework, classwork, or active participation in the class. Although identified regulation falls within extrinsic motivation continuum, the locus of control is internal and therefore is classified as autonomous forms of motivation. Identified regulation was also positively correlated with students' academic achievement when measured through examination marks, while extrinsic, introjected, and intrinsic motivation were negatively correlated with academic achievement.

Recommendations

As a result of the findings of this research and international best practices, the following recommendations are made:

Students have identified with the importance of completing their homework, classwork, and actively participating in the classroom discussions. Students are autonomously motivated to complete these academic tasks and it may be because of the assessment policies, although they are not intrinsically motivated. This indicates that proper and adequate assessment policies could

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potentially facilitate student's self-regulated learning. Therefore, assessment strategies should be developed which facilitates students' autonomously regulated learning.

Teachers need to customize learning activities to provide differentiated instructions to the students and thus provide greater opportunities for autonomous learning. Customizing individual learning tasks in accordance to students' interests and dispositions could instill autonomous motivation and hence promote autonomous learning. Such learning should also be assessed accordingly. In this knowledge age, it seems of paramount importance that children be provided with the flexibility to pursue their interests to shape their skills into a meaningful learning.

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